

The IRON AGE

January 8, 1959

A Chilton Publication

The National Metalworking Weekly



Rockwell's W. F. Rockwell, Jr.

**How to Sell
In New European
Market** P. 39

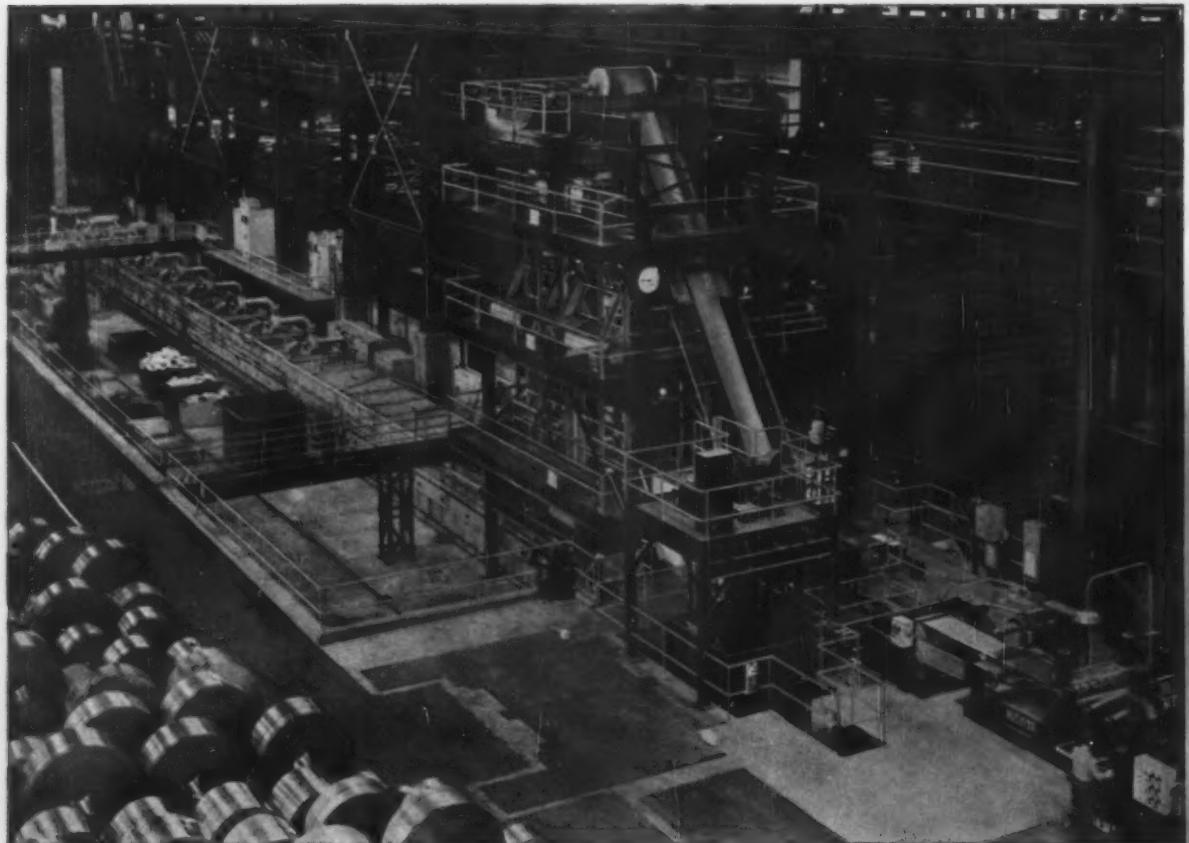
**Behind the Growth
Of Industrial Leasing** – P. 27

**New Tracer Control
Follows Pencil Lines** – P. 59

Digest of the Week – P. 2-3

Continuous galvanizing lines

Designed and Built by
MESTA



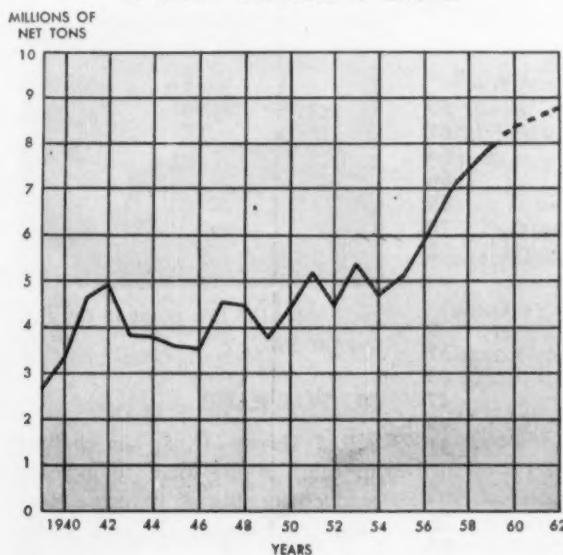
Mesta 48" Continuous Galvanizing Line

Designers and Builders of Complete Steel Plants
MESTA MACHINE COMPANY
PITTSBURGH, PENNSYLVANIA

MORE structural steel is available— now and in the years to come

In 1959 builders of highways, bridges and buildings will have available more steel than ever before. The steel industry (and Bethlehem Steel in particular) has expanded facilities for producing structural shapes so that there is steel for the job.

**RISE IN STEEL INDUSTRY'S PRODUCTION
OF HEAVY STRUCTURAL SHAPES**



We estimate the industry will be able to turn out 8 million tons of structural steel in 1959. What's more, it is estimated that anticipated expansion will bring the industry's capacity up to 9 million tons annually by the mid 1960's.

BETHLEHEM INCREASES CAPACITY

Since our Bethlehem, Pa., plant is the largest single unit producing structural shapes in the country, its role is a most important one.

In 1955, for example, we were caught in a squeeze. We had foreseen the increased demand and had already started a huge expansion program a year earlier. Expansion on such a major scale required the shutting down of some facilities, and just at that critical period, the boom hit. So while we were in the midst of trying to relieve the shortage of the future, we were temporarily unable to turn out as much as before.

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Structural steel is available. You can plan and design in structural steel with complete assurance, both now and in the years to come.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

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THE IRON AGE
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January 8, 1959—Vol. 183, No. 2

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The Market Is Growing—The industrial leasing market is reaching for a \$300 million year in 1959. Metalworking invested some \$12 million in leasing last year. P. 27

TITANIUM

Recession Is Over—The industry has been scrambling to come



back since the low point in the last quarter 1957. P. 29

OUTPUT RACE

Red Threat—U. S. has chalked up gains in the drive to increase productivity. But so have the Russians. And apparently at a faster rate. P. 30

ELECTRIC GOODS

Forecast Is Up—The National Electrical Manufacturers Assn. predicts shipments in 1959 will be close to \$21 billion. This would be seven pct better than last year. P. 31

NEW SANDWICH PANEL

Aluminum-Plastic Combo — A

n Metalworking



new construction panel made of expanded plastic beads sandwiched between sheets of aluminum has big potential.

P. 32

NEW CONGRESS

Issues Shaping Up—Major issues to expect when Congress convenes will include depreciation laws, government spending, need for producing conventional weapons. P. 47

FEATURE ARTICLES

FLAME CUTTER

Guides on Drawings—A new 10 x 20-ft shape-cutting machine follows an ordinary pencil-line drawing of the shape to be cut. The unit's optical scanning system follows the exact center of any line drawn 0.040 in. wide or less. Scanning speed is up to 25 ipm with less than 0.005 in. error. P. 59

COATING FOR MOLYBDENUM

Cr-Ni Does the Job—To protect molybdenum from oxydation at high temperatures, a two-layer electrodeposited coating consists of a layer of nickel over chromium. At 1796°F, the coating protects the base metal for over 1000 hours. P. 62

ULTRASONICS

Cleans Delicate Parts—Mu-metal laminations, vital to electronic brains and computers, depend on proper cleaning for their usefulness. Ultrasonics does the job where other

methods fail. It cavitates in solution to blast grease, dirt and other contaminants from surfaces P. 64

NEW GRINDING METHOD

For Single-Point Tools—The emphasis is on the tip (radius) of the tool point and on the relief angle. A new tool grinder not only grinds to precise gage accuracy, but grinds tool points with the desirable cone-type relief radius. P. 66

COST CUTTING

Through Quality Control—There's always a reason for excesses of rejected parts. By tracking down the source of scrap and salvage, both big and small cost cuts can be made through quality control. P. 72

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ECONOMY CARS

Sixes Gain on Eights—Fewer consumers were lured by the roar of powerful engines in 1958, sales results show. A greater number of car buyers were willing to take a little less floss. P. 43

NEXT WEEK

VIBRATION FINISHING

Speed and Simplicity—A new method of precision finishing metal parts works as well on shielded or interior surfaces as it does on external sections. Next week's technical feature will tell how controlled vibrations handle delicate parts.

WORLD MARKETS: Can U. S. firms thrive in Europe's changing markets? W. F. Rockwell, Jr., president of Rockwell Manufacturing Co., not only thinks they can, but believes the new European markets create great opportunities for U. S. firms that venture abroad. P. 39

FARWEST STEEL SALES

Gains Above '58 Forecast—Steel sales in the eleven state Western area this year could be 25 pct above 1958 levels. Shipments might top the 6.5 million ton mark. P. 49

MACHINE TOOL RECOVERY

Slow Coming—The statistics tell the sad story. Both new orders and shipments took a nosedive in 1958. The first 11 months were 50 pct below the 1957 rate. P. 51

STEEL BUILDUP

Market Is Stronger—Mills warn customers that hand-to-mouth buying will be risky business from now on. One mill is already allocating plates. Demand for most steel products grows. P. 93

ELECTRIC MOTORS

A Buyer's Market—Stable prices and prompt delivery will hold sway in the electric motors market for at least six more months. Motor makers have reduced their own finished inventories but are still able to meet rush orders. P. 94





Get new-forging performance at 1/3 the cost from ERIE FOUNDRY REBUILDING SERVICE

Here at the Erie Foundry Rebuilding "Hospital", we disassemble and inspect your forging hammer, remachine worn surfaces, true bearings, replace broken parts, repair cracked parts. Once the hammer is reassembled, tested and put back in operation, it'll be as spry and sound as a new machine—but at one-third the cost!

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EP-59-02

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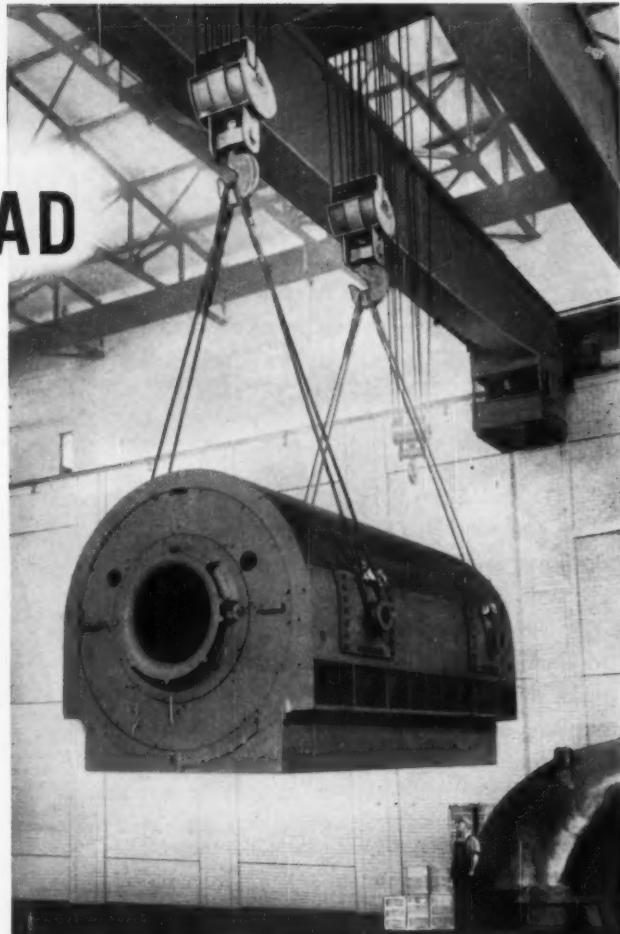
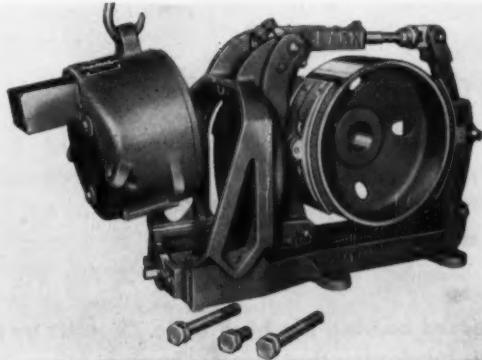
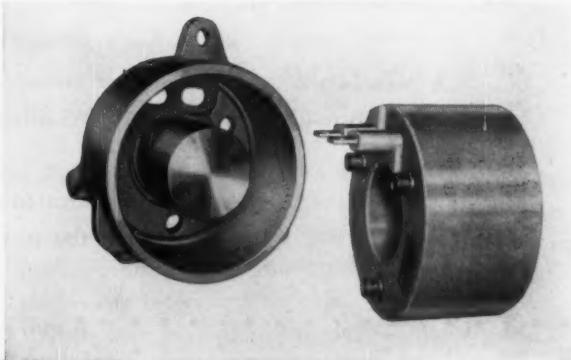


Photo Courtesy of Cleveland Crane & Engineering Co.



By removing 3 bolts, magnet case and coil can be removed on the job without disturbing any other part of the brake. Full torque is maintained.



Epoxy-encapsulated coil is easily removed from magnet case by loosening 3 retainer bolts (4 on larger sizes) allowing coil to slide out.

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Guide to potential 4% profit increase makes Texaco book latest business best seller

Why you need it: The Texaco guide uncovers a new area where management can effect real economies in reduced maintenance costs. This is especially important now that decentralization and generally lower profit margins make the profit-and-loss statement the real measure of each plant unit's management efficiency.

What it will tell you: With facts like these, the Texaco guide shows that organized lubrication can raise production, extend parts life, and cut downtime:



★ A metalworking manufacturer saved 315 man-hours per month through more efficient lubrication.

★ A major corporation anticipates substantial maintenance savings through the services of a lubrication engineer.

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- Please send me Management Practices that Control Costs via Organized Lubrication.
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★ A mill has increased bearing life from 16 to 72 shifts by instituting systematic lubrication that insures the right lubricant for each machine.

How it will help you: Only organized lubrication gives management such an opportunity for savings. For example, a 10% reduction in maintenance costs through better lubrication methods will increase profits up to 4% in the average plant — more than equivalent to a 4% increase in sales. And Texaco's new guide shows how it may be done.

How to get your copy: Simply fill in the coupon, attach it to your letterhead, and mail it to The Texas Company, 135 East 42nd Street, New York 17, N. Y.

The Labor Outlook: It's Anything but Placid

Let's face it. This will be a rugged labor year for management. If business men stand up and fight they will be tagged as unrealistic. If they take a long strike they will be accused of stopping recovery.

If they settle after a bitter strike and must raise prices to meet the higher wage costs, they will be condemned.

So far it looks as if this is management's year of decision. But it's a year of decision for labor unions, too, whether they know it or not. And just how far the union bosses push their luck—and their power—will tell how much of a decision it will be.

Let us dispense with talk of productivity, excess profits and whose ox is being gored. It just isn't in the economic cards to have a wage-price raise year after year after year—without the real price being paid some time. And that time will come no matter what we hear about our "new" era, et cetera.

Union leaders are feeling their oats. As they see it they helped elect a slew of Congressmen. And they will present their bill this year. This feeling of power will find its way into collective

bargaining sessions. Aside from the power, the elections, and the yearly successes, union chiefs also must outdo each other.

If you are inclined to believe this is management's year of decision you are right. But it will take a rugged, courageous and lonely group of men to slow up the onward march of wages, fringe, and welfare do-dads.

You would think union chiefs would see that they are pricing themselves out of the market; that they are bringing controls closer, more statism, and eventually a curse on their houses.

Sooner or later the consumer will doff his worker's hat long enough to see that there must be a halt to higher and higher prices by calling a halt to higher and higher wages each year. Some day the average person will know that it isn't how much money you get that counts, but how much you get for your money. It might be too late before this happens.

This year may start the painful process of learning for labor. Unless unions learn statesmanship they will pull their houses down—or lay the groundwork for total government control.

If that comes, we all lose.

Tom Campbell
Editor-in-Chief

CASE HISTORIES



Exclusive Sentri-Seals effectively seal out foreign materials at temps up to 225° F for extended periods — up to 350° F for shorter periods. Made of Buna-N, they are compatible with silicone, petroleum and diester lubricants.

Photo courtesy: Thor Power Tool Company

N/D Bearings Seal Out Abrasives...Allow Cool Operation In 21,600 R.P.M. Grinder!

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Tool manufacturer requires bearing design that will seal 21,600 r.p.m. grinder from abrasives . . . yet heat must be minimized for operator comfort since tool is hand held.

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DIVISION OF GENERAL MOTORS, BRISTOL, CONN.
NOTHING ROLLS LIKE A BALL

Preheat Electric-Arc Scrap

A scrap preheater may cut electric-arc steel-making costs by 22 pct or more. It's used in the meltdown stage where the bulk of electrical energy (about 80 pct) is normally consumed. The setup uses a top-fired, downdraft, vertical furnace, adaptable to top-charge arc-furnace practice. Test runs have shown reductions in melting time and better carbon control.

New Flux Simplifies Brazing

Just announced is a new volatilizing flux for brazing high-temperature alloys. The flux eliminates special surface preparation of A-286, 17-7PH, Inconel X, GMR 235, Udimet 500, and other hard-to-braze materials. It's especially applicable to honeycomb sandwich structures and heat exchangers in the 1800-2000°F range.

Wages Key to Foreign Tools

Foreign tool imports picture for 1959 is a clouded one. Quantity of tools that will be imported is impossible to judge now, domestic tool and die makers say. But low wages paid to foreign industry employees lead to finished product prices that attract U. S. users. Compare the foreign tool and die employee who gets 75¢ an hour with U. S. counterpart who gets a top \$3.25.

More on Small Car Plans

For program purposes only, Ford calls its 107-in. wheelbase small car the XM-Thunderbird. The 144-in. model has the code name X-Edsel "B." While there's no clue to body style, the codes may be a tip-off on who will sell them. The cars may use cast iron cylinder block as well as conventional frame and body.

Electronics Gages Tubes

An electronic encoding system is replacing hand measurement and tallying of tubes. As tubes roll against a zero line, the operator pushes a stop against the other end of the tube. He presses a "record" button and the system accurately

measures and prints in feet and inches on a final tally sheet in the shipping office on an adding machine. Footage in any lot can be immediately obtained by pressing the "total" button on the adding machine.

Machine Tools: Gradual Rise

Look for gradual, rather than sudden increase in machine tool orders, say inside observers. They report an increase in firm inquiries. Although improvement in market seems spotty, signs are encouraging. It's said to be pegged on interest in numerical controls and job-lot automation, coming from middle and smaller size manufacturers. New automotive capital investment programs don't figure in near future.

Forecasts Low on Plate Use

Pressure in some locales continues to grow for first quarter plate. Some mills are sold out into March on wide plate. Customers are reporting their own forecasts on expected plate use in first quarter may have been somewhat low.

Dispute in Union Merger

A serious split may threaten the merged AFL-CIO labor federation. Insiders admit a rift between craft and industrial members is sharp, but discount a breakup. United Steelworkers and other industrial unions complain hotly that craft unions in the metal trades department are raiding. Old AFL groups such as iron workers, boilermakers, and plumbers say they'll continue to compete for members.

Drive to Evaluate Selling

Watch for a drive among major companies to evaluate distribution costs, particularly selling costs, during 1959. One system that is already attracting much attention: concentrating market analysis on the top 25 pct of the customer list, which often represents 75 pct of total sales. In one case, salesmen's reports include data on amount of inventory, present business level and projected demand among customers in the top 15-pct bracket.

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LETTERS FROM READERS

Business Gifts

Sir—My congratulations on your editorial of Dec. 18—"Business Gifts—Are They on the Way Out?"

It is my opinion that it was not only a good business editorial, but also a good down-to-earth sermon.—E. B. Apfeld, David J. Joseph Co., Cincinnati.

Structural Story

Sir—Your Dec. 18 story, "Structurals Enter Era of Plenty," is welcome news to those engineers who prefer to use structurals.

Your first paragraph commented "the men who make structural steel and fabricate it have been worried about the inroads of concrete construction." This would not be necessary if engineers and fabricators would accept the fact that design and fabrication costs can be saved by a wider use of welded connections, rather than the riveted or high tensile bolts you mentioned.

We have designed and constructed many large welded steel frame buildings which are more economical than similar reinforced concrete structures. Modern floor construction and modern designing

make this possible in all multi-story buildings.—V. R. P. Saxe, Baltimore.

Nonferrous Dollar

Sir—in your Dec. 11 issue there was a special report in your metal-working dollar series.

This article on nonferrous castings attracted our attention and deserves special commendation. We would like to get an additional dozen copies.—B. Kaufman, Vice Pres. & Gen. Mgr., Ajax Metal Div. of H. Kramer & Co., Phila.

Cost Per Pound

Sir—I read with interest the information on per pound costs of automobiles and other products in your Dec. 4 Fatigue Cracks column.

Mr. Kimberly (De Soto's chief engineer) has a right to be proud that the average medium priced, four-door sedan costs only 72 cents per pound.

Don't you feel that the manufacturers of railroad rolling stock may also take justifiable pride in the fact that a freight car (such as a boxcar, gondola, hopper, and covered hopper car), costs from 16 to 19 cents per pound. This low-cost equipment operates in various parts of the country, under all sorts of conditions, carrying every conceivable commodity, and has a life expectancy of twenty to thirty years.

Furthermore, this cost of 16 cents to 19 cents per pound is achieved even though the car building industry has been handicapped by the cyclical purchasing of the railroads and the lack of standardization which has existed.—D. M. Blomberg, Market Analyst, Research and Development Dept., Pullman-Standard Car Mfg. Co., Hammond, Ind.



"He works better under pressure."



IN FASTENERS
SOUTHERN IS
progress

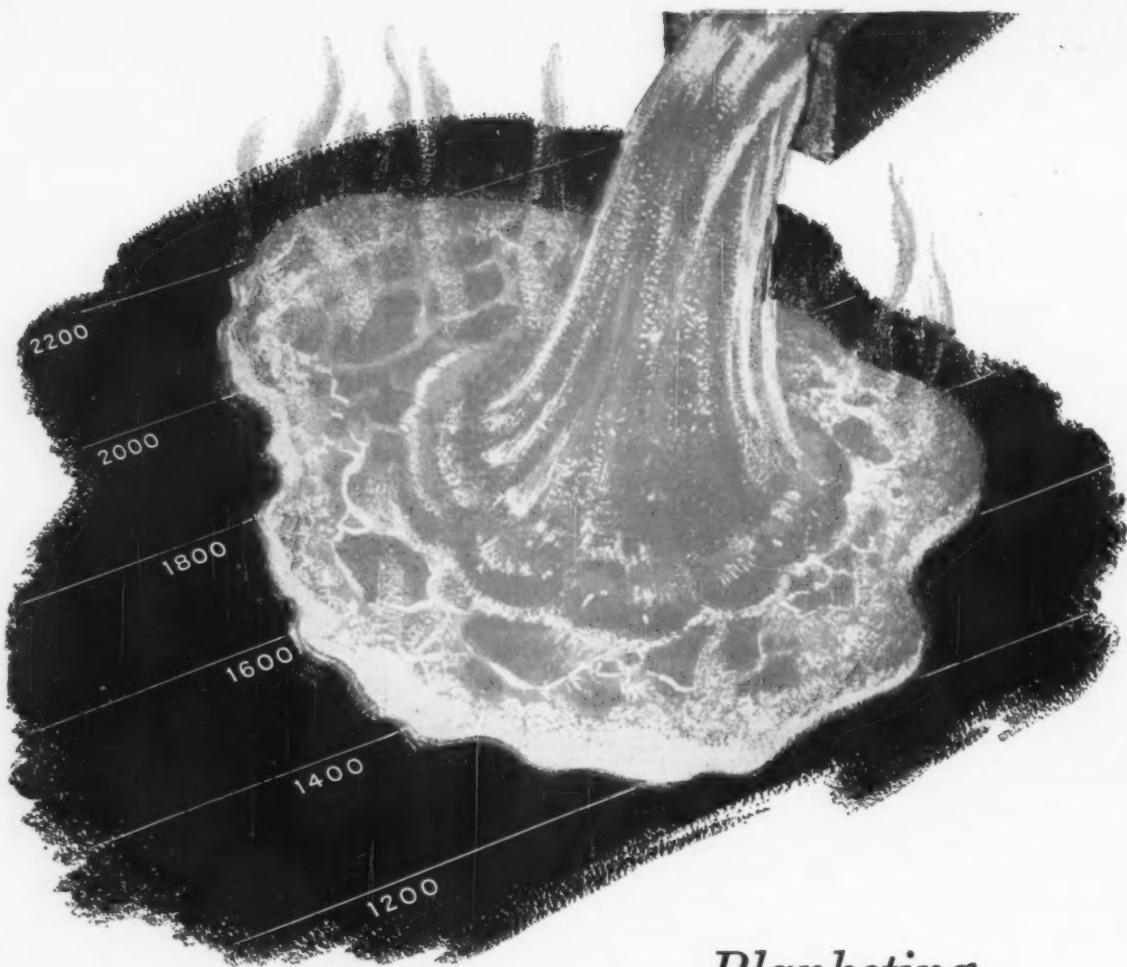
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HAYNES STELLITE COMPANY
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FATIGUE CRACKS

Welcome Aboard

Included among IRON AGE correspondents in the U. S. and overseas is a new man. He's Albert T. Collins, now reporting metalworking for us in the Houston, Texas area.

We asked Mr. Collins to introduce himself to IRON AGE readers



and he furnished a photo and this data:

He's 41, married, and the father of four sons. He's a working newspaper man with more than 13 years' service on the Houston Chronicle. Current assignment: Assistant city editor.

Mr. Collins, born in Washington, D. C., met his wife there while in the U. S. Army. His military service spans five years, includes a period as a public relations officer in Philadelphia. He ended his army career as a captain attached to General MacArthur's staff.

A former president of the Houston Press Club, Mr. Collins lists his hobbies as reading and stamp collecting. He hopes his sons will absorb his avid interest in stamps and take over the hobby later on.

Export Advice

If you're active in the export business at all, you know U. S. firms are entering a new era in foreign operations.

Formation of the European Common Market, which went into effect New Year's Day, is the start of a series of major changes in European markets that will require an entirely new evaluation of business abroad.

To help metalworking firms get pointed in the right direction, The IRON AGE asked Williard F. Rockwell, Jr., president of the Rockwell Manufacturing Co., to give his views on the new European Market.

If you turn to p. 39, you will learn that Mr. Rockwell believes there is a danger of U. S. firms being chased out of world markets, unless they take definite steps. But he also believes that the new European market offers the greatest potential for U. S. industry in years. And, most important, he tells how he believes U. S. companies can best sell that market, some pitfalls to avoid, and some details of Rockwell's own experiences.

One for the Road

Do you wake up grouchy and grumpy? Do you have trouble getting started in the mornings?

Well, don't worry about it any longer. Help is here. Help that starts even before you get to the office.

R. L. Martin of Ocala, Florida is the man with the answer according to the current issue of Armco's Highway magazine. He built a stove for coffee brewing that fits under the front seat of a car. The engine exhaust provides the heat for this built-in burner.



For extra protection,

extra wear . . .

PROTECTION
NORTH • PVC GLOVES
AT ALL POINTS

Good reasons!

- **Outwear** other types two to five times
- **Have excellent pliability, afford extra comfort and dexterity**
- **Chemical-resistant PVC compound withstands almost all acids, alkalis and solvents**
- **Nonaging, nonoxidizing and nonflammable**

Bring your safety rules up to date! Make sure that your employees have the best hand protection available—North PVC Gloves. Not only will they give better protection, but they'll wear and wear.

Tell us your working conditions on your letterhead and we'll be glad to send you a free pair.

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NEW MATERIAL
for your tough
insulating and
refractory jobs



FOAMSIL®

the acid-proof insulating refractory

The photograph above illustrates one critical application in which material failure would be, to say the least, unfortunate. Undoubtedly you have many severe plant or process operations where insulation or refractory failure would be equally unfortunate. It is for just such applications that Pittsburgh Corning has developed its new acid-proof insulating refractory—called FOAMSIL.

FOAMSIL is 99% pure silica expanded to form millions of airtight cells. These cells create excellent insulating value, and since the cells are sealed against moisture, that insulating value remains constant.

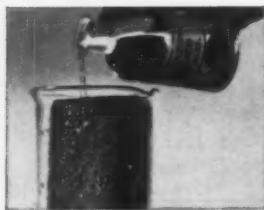
Because FOAMSIL is composed of silicon dioxide, it cannot oxidize further—thus withstands high temperatures. It won't react with common acids and has a high melting point. It is incombustible, will not lower the

flash point of hydrocarbons, will not thermal shock and is dimensionally stable. It is easy to cut and fit.

Among potential applications for which FOAMSIL should prove ideal are these: acid-proof tank linings . . . precipitators . . . furnace linings . . . lead acid chambers . . . concentrator towers . . . stack and flue linings . . . reradiating shields . . . environmental test chambers . . . insulation for underground piping. Your own insulating and refractory requirements will undoubtedly suggest a host of other uses for FOAMSIL.

Write today for a free sample of FOAMSIL and complete descriptive literature. Find out how to put this unique new insulating refractory to work to improve your operations. Write Pittsburgh Corning Corp., Dept. IAS-19, One Gateway Center, Pittsburgh 22, Pa.

ACID-PROOF



MOISTURE-PROOF



EASY TO WORK



SIZES AND SHAPES

FOAMSIL is ideal for temperature ranges from -450°F to +2200°F continuous. It is available in flat blocks up to 3 inches thick measuring 11" x 17" or 17" x 22" . . . and in various standard or special shapes including internal or external pipe insulation, curved sidewall segments, and fitting covers.

another new product from

P I T T S B U R G H

PC CORNING

COMING EXHIBITS

Ornamental Iron Trade Show — Jan. 8-10, Atlanta Biltmore Hotel, Atlanta, Ga. (National Ornamental Iron Mfrs. Assn., 1977 College Ave., N. E., Atlanta, Ga.)

Plant Maintenance & Engineering Show — Jan. 26-29, Public Auditorium, Cleveland. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

International Heating and Air Conditioning Show — Jan. 26-29, Convention Hall, Philadelphia. (International Exposition Co., 480 Lexington Ave., New York 17.)

Western Metal Show — March 16-20, Pan-Pacific Auditorium and Ambassador Hotel, Los Angeles. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

Corrosion Show — March 16-20, Chicago. (National Assn. of Corrosion Engineers, 1061 M & M Bldg., Houston 2, Texas.)

Industrial Finishing Show — June 15-19, Detroit Artillery Armory, Detroit. (Information: H. J. McAleer, 3171 Bellevue, Detroit 7, Mich.)

MEETINGS

JANUARY

Institute of Scrap Iron & Steel, Inc. — Annual convention, Jan. 11-14, The Waldorf Astoria, New York. Institute headquarters, 1729 "H" St., N. W., Washington, D. C.

Society of Automotive Engineers — Annual meeting and engineering display, Jan. 12-16, Sheraton-Cadillac and Hotel Statler, Detroit. Society headquarters, 485 Lexington Ave., New York 17.

Malleable Founders' Society — Semi-annual meeting, Jan. 15, Hotel Cleveland, Cleveland. Society head-
(Continued on P. 18)



Menasha Container of California **Saves \$10,000 yearly with high speed strapping!**

FULLY AUTOMATIC strapping of K. D. Cartons is a practical reality. At Menasha Container of California, Division of Menasha Wooden Ware Corporation, for example, an A. J. Gerrard *Automatic Round Steel Strapping Machine* has speeded operations, eliminated bottlenecks . . . is saving the company approximately \$10,000 annually in manpower alone.

WORTH INVESTIGATING. Fully automatic equipment could offer you similar savings. Or possibly, by merely utilizing our newest strapping materials (and your present methods of application) you could cut your strapping costs as much as 50-80%. In any case, we offer you unbiased counsel with no obligation. Use the coupon below or the reader service card for details.

MODEL 3001 & 3002 PRODUCT FEATURES

- Fully automatic.
- Up to 26 ties per minute.
- Package size capacity—Min. 2" H x 8" W. Max. Widest 27½" H x 43" W. Max. Highest 33" H x 34".
- Top and side compression of packages.
- Two machines can be operated in tandem. Dual ties 13½" or more centers.
- Rugged, durable construction for low maintenance.
- Mobile Mounted on casters for easy movement.



FREE NEW CATALOG

A.J. GERRARD AND COMPANY

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- I'M INTERESTED IN YOUR EVALUATION SURVEY.
 SEND FREE COPY OF HANDBOOK OF STRAPPING AND MATERIALS HANDLING PRODUCTS.

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The bright, smooth surface of the sheet steel which International Harvester's Motor Truck Division demands

for its light trucks is apparent here on the cab assembly line. Good surface speeds production in the paint shop.

Pittsburgh Steel's Sheet Provides Beauty, Durability For International Trucks

How do you combine ruggedness with the contemporary styling now going into light trucks?

International Harvester Company meets that challenge so well that one International model sells as a three-door station wagon. That's the Travelall, designed as a commercial, personnel carrier, which typifies the clean design of all International pick-up and panel trucks.

International combines rugged-

ness with good styling, in large part, through the use of cold rolled sheet steel, like that supplied by Pittsburgh Steel Company.

Here's what International expects from steel sheet and what Pittsburgh Steel provides consistently in shipment after shipment:

- Deep Drawing Quality. Many of the component parts have severe bends and sharp raises.

- Weldability. International spot welds sheet sections eight feet long in a series of welds on automatic machines. If welds vary in quality, assembly line operations must be interrupted.

- Flatness. When long sections are being welded, flatness of sheet is essential. Waviness would prevent close alignment of sections being welded and make it impossible to

use automatic welding machines on the plant's assembly lines.

• **Dense Surface With Extra Smoothness.** International insists upon, and gets, a near perfect surface. Pittsburgh Steel's cold rolled sheet, with its smooth and dense surface—free of defects—enables International to apply multi-coats of enamel without a primer. The production economies are passed on to International's customers.

International truck bodies go from assembly line to paint shop after an alkaline wash, a phosphate bath and an acid rinse.

Only the best sheet surfaces make this practice possible.

Since the Springfield plant of International Harvester's Motor Truck Division can process about 10 million pounds of sheet a month, any supplier of sheet must be capable of consistently meeting International's requirements on a long-term basis.

The skilled steelmakers and the new rolling mill of Pittsburgh Steel Co. meet these demands from day to day and shipment to shipment.

Put Pittsburgh Steel's sheet to work for you. You get faster production, fewer rejects, more economical operations and a more durable product with a pleasing appearance.

You can start benefiting today. Just get in touch with the nearest district office listed below.



Weldability of the sheet shows up here where the door post, held by quick-action clamps, is spot welded to the cowl on the cowl sub-assembly line.



All components of the nearly completed cabs seen here are made of sheet steel. Note the sharp raises in the door post on which the cab door will be hung. This part, made of Pittsburgh Steel, must have good drawing quality as well as weldability and a surface that will take a fine paint job.



Pittsburgh Steel Company

Grant Building

Pittsburgh 30, Pa.



District Sales Offices

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Chicago

Cleveland
Dallas

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Los Angeles
New York
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No. 2 in a series of Hoerner Packaging Experts

THIS IS THE HOERNER SPECIALIST FOR PACKAGING ROUND THINGS

Keeping round things from rolling around inside square boxes is a Hoerner specialty. Through clever use of punched, die-cut, rolled, folded, taped or stapled corrugated board, Hoerner experts keep the roundest objects well protected during shipping. If you manufacture round things, and shipping costs or damages are getting away from you, contact the nearest Hoerner office.



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Corrugated Specialists for Mid-America

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Sand Springs, Oklahoma • Minneapolis, Minnesota • Fort Worth, Texas • Sioux Falls, South Dakota
Fort Smith and Little Rock, Ark. • Affiliate—Cajas y Empaques Impermeables, S. A., Mexico City D. F., Mexico

EXHIBITS, MEETINGS

(Continued from P. 15)

quarters, 1800 Union Commerce Bldg., Cleveland.

Industrial Heating Equipment Assn., Inc.—Annual winter meeting, Jan. 19-20, Cleveland. Society headquarters, 1145 19th St., N. W., Washington 6, D. C.

Steel Kitchen Cabinet Mfrs. Assn.—Winter meeting, Jan. 20, Blackstone Hotel, Chicago. Association headquarters, 1008 Engineers Bldg., Cleveland.

Steel Shipping Container Institute, Inc.—Winter meeting, Jan. 20-21, St. Regis Hotel, New York. Society headquarters, 600 Fifth Ave., New York 20.

The American Boiler Mfrs. Assn.—Mid-winter meeting, Jan. 22, Statler Hotel, Cleveland. Society headquarters, 4062 Mayfield Rd., Cleveland 21.

Hoist Manufacturers Assn.—Annual meeting, Jan. 22, Palm Beach Biltmore, Palm Beach, Fla. Association headquarters, One Thomas Circle, Washington 5, D. C.

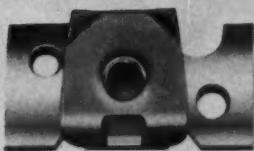
Institute of Surplus Dealers—9th annual trade show, Jan. 25-28, New York Trade Show Bldg., New York. Institute headquarters, 700 Eighth Ave., New York.

Truck Trailer Manufacturers Assn.—Annual convention, Jan. 26-28, Hollywood Beach Hotel, Hollywood, Fla. Association headquarters, 710 Albee Bldg., Washington 5, D. C.

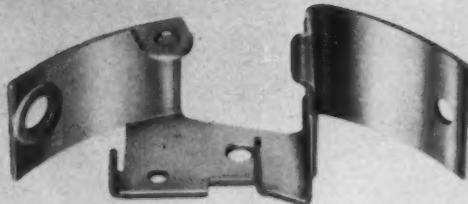
Society of Plastic Engineers, Inc.—Annual technical conference, Jan. 27-30, Hotel Commodore, New York. Society headquarters, 65 Prospect St., Stamford, Conn.

Association of Roller & Silent Chain Manufacturers—Annual meeting, Jan. 28-29, Drake Hotel, Chicago. Association headquarters, 3343 Central Ave., Indianapolis.

produce your STAMPED COMPONENTS WITHOUT SECONDARY OPERATIONS

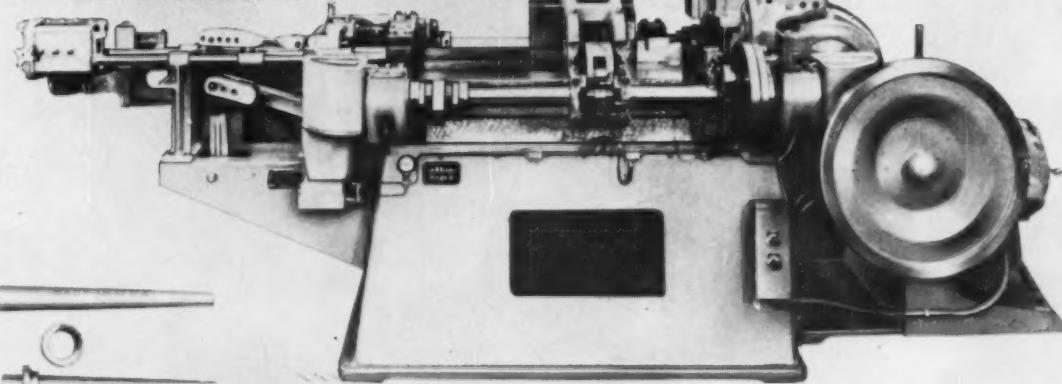


Brass Stamping, twice actual size, pierced, trimmed, formed, counter-sunk and tapped in one operation on U.S. Multi-Slide, Model #33.

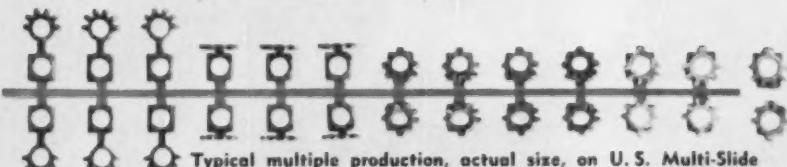


Steel Stamping, actual size, pierced, trimmed, counter-sunk, beaded and formed on various planes. Produced in one operation on U.S. Multi-Slide, Model #35.

The Model #35
U.S. Multi-Slide Machine



Aluminum conical tube, actual size, and shaped collar assembly. Both pieces produced and assembled simultaneously in a single cycle of U.S. Multi-Slide, Model #28.



Typical multiple production, actual size, on U.S. Multi-Slide machines. Two complete parts produced in each Multi-Slide cycle.

In a single U.S. Multi-Slide® cycle you can pierce—trim—countersink—bead—emboss—swage—tap—form—and assemble in almost any combination • U.S. Multi-Slide "built-in motions" offer a practically unlimited variety of tooling possibilities. **In One Operation** you can produce components and assemblies that would ordinarily require multiple handling • Stampings or assemblies produced on the U.S. Multi-Slide are consistently uniform and to required tolerances • If you produce or purchase stamped components, investigate the cost saving potential of U.S. Multi-Slide machines. • Ask for a copy of Bulletin 15-1 or to compare manufacturing costs—send in samples or drawings of the part you want to produce.

U. S. TOOL COMPANY, INC. AMPERE (East Orange) NEW JERSEY

U. S. Multi-Slides® • U. S. Multi-Millers® • U. S. Automatic Press Room Equipment • U. S. Die Sets and Accessories





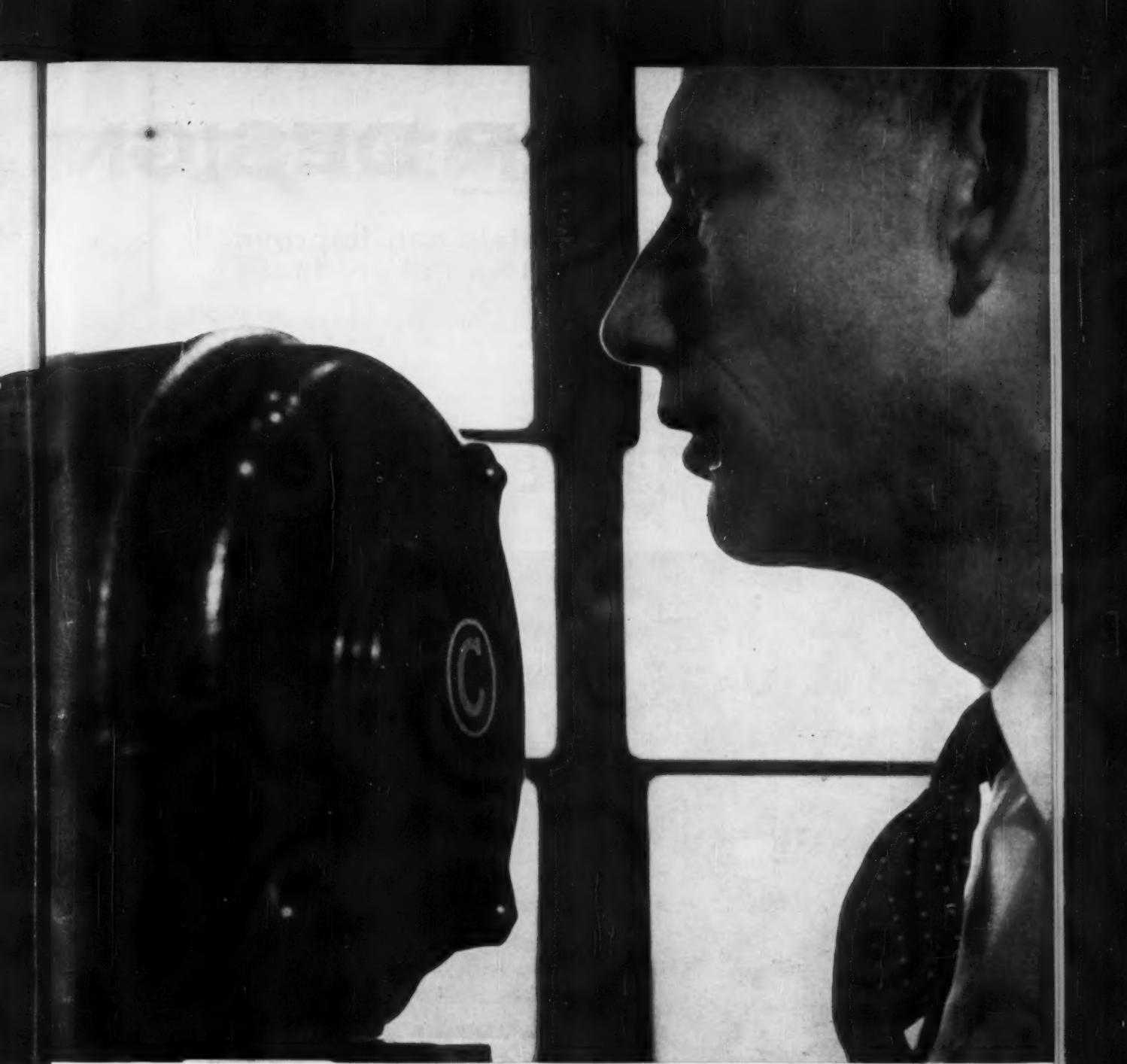
This motor can drive

This squirrel cage, open frame, integral horse-power Century Electric motor works fine on dozens of applications. You'll find it giving dependable low-cost service on blowers, fans, pumps, lathes, drilling machines and grinders. But . . .

It can't do everything. There are many applications where it won't give good results. That's why you can't use just any motor on your equipment. You need the right motor. The motor that

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Over 10,000 types of motors are available from Century Electric. There is one for every type of application and any operating condition—dusty, corrosive, explosive or moist. Century Electric sales engineers will help you select the right one. They don't have to rely on few types, like this

standard squirrel cage motor, to do everything. For more than a motor—for help in selecting the right motor for your application, just contact your nearest Century Electric Sales Office or Authorized Distributor. A Century Electric sales engineer will be glad to help you.

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Century
58-1

THE OTHER DESIGN P

How the copper metals can improve production as well as the product

How freely can you design for performance? How inhibited are you by the production requirements of your equipment and your materials?

When the materials of design are the copper metals, there are many ways, old and new, of converting the pilot model into mass production. In fact, the production versatility of these metals is as important as are their functional advantages. The facility of copper and its alloys for forming, machining, joining and finishing gives the product engineer

greater latitude by helping him solve the *other* design problem — the problem of production.

Forming Methods

Various of the copper metals have the *ductility* for easy spinning, stamping, pressing, cupping and deep-drawing. They have the *malleability* for intricate and accurate forging, cold heading, coining, embossing, extruding, knurling, swaging, etc. Many are readily *machinable* at high speeds and feeds. They can be *cast* into large or intricate shapes. Copper and its alloys can be easily *soldered* — or, for even stronger



DESIGN FOR PRODUCTION is often aided by the copper metals. These screw machine parts (shown slightly larger than actual size) for gas conversion appliances are mass-produced at the rate of millions per year. They require a wide range of secondary machining operations, such as slotting, milling and cross drilling. Free Cutting Brass has the machinability and uniformity to help keep production high and efficient, no matter how exacting the operation. Some of the orifices, for example, must be made with drills as small as No. 80 (.0135").



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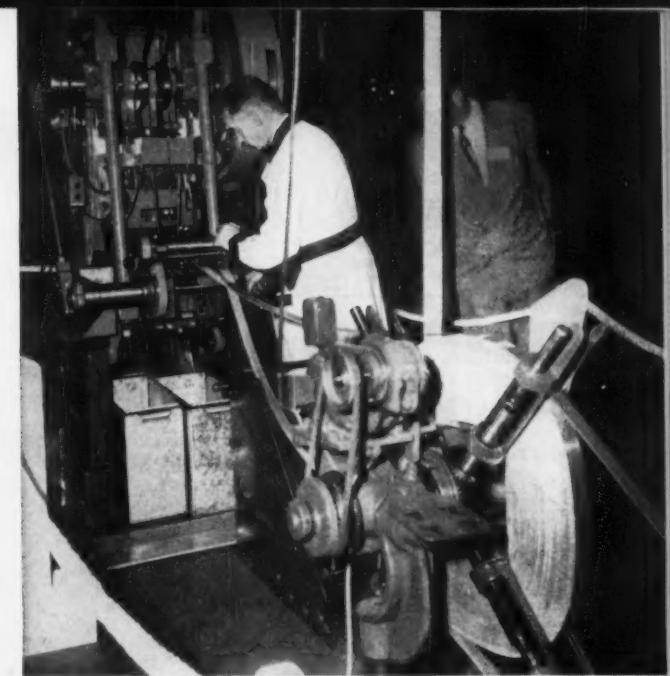
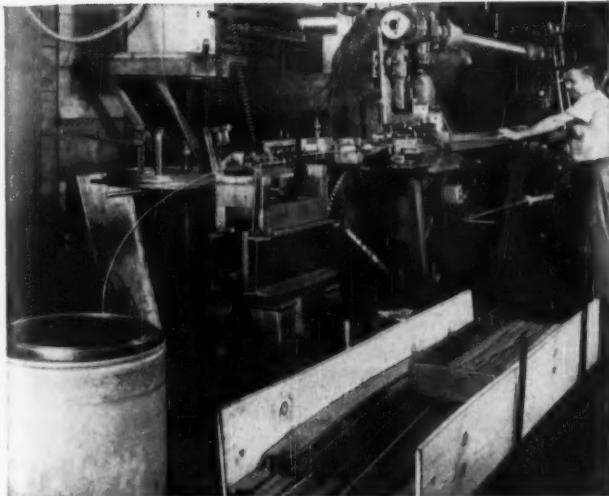
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PROBLEM



LESS DOWNTIME and less handling result from longer lengths of brass mill products. The barrel-feed coils at left feed a continuous hinge machine for conversion to hinge pins. Long coils of strip above are being drawn into cups in the press.

joints, *brazed* with either silver-base or copper-base alloys. Many of the copper alloys can also be economically joined by modern methods of arc welding and oxyacetylene welding. Some of these methods are entirely automatic.

Manufacturing Economies

A number of factors, besides easy forming, machining and joining, are resulting in considerable savings in the fabrication of the copper metals. These include reductions in manufacturing time due to preforming, reductions in scrap due to the availability of custom shapes from the brass mills, and the high resale value of the limited scrap produced.

Die-pressed forgings and special extrusions of precise cross-sectional form are among these important cost savers. For example, the brass yoke of the float valve shown at right was formed from an extrusion at a savings of 40%, in time and metal, over previous methods. An extruded shape costs more per pound than standard rod or bar, but the reductions in machining, forming and finishing costs may save you far more than the difference in initial price.

Automation Requirements

The copper metals can make automation more efficient. Machinability is one of the reasons. Many of the alloys can be milled at high speeds and feeds. Tools last longer and downtime is reduced.

Longer continuous runs are also made possible by the long lengths that the mills can now supply. The barrel-feed coils of wire and the extra-length coils of strip shown above are widely available. Greater-than-mile lengths of .005" gauge Cartridge Brass, 70%, for example, are frequently supplied for use in presses, eyelet machines or roll formers.

These recent developments in the copper industry, and the fabrication properties of the copper metals themselves, let you take full advantage of these metals by helping you to solve "the other design problem" — design for production. A 16-page reprint of "How to Get More for Your Metalworking Dollar — Copper and Brass" is available from the Copper & Brass Research Association, 420 Lexington Avenue, New York 17, New York.



CUSTOM EXTRUSIONS SAVE 40% in the fabrication of this brass yoke for a ball float valve. Custom extrusions like this save both metal and manufacturing time. They machine readily, are accurate in dimensions, and are available in long mill lengths to facilitate automatic operations.

There's a new frontier in...

**COPPER · BRASS
BRONZE**



we're rolling!

NOW...AT INLAND...500,000 ADDITIONAL TONS CAPACITY FOR COLD ROLLED SHEET PRODUCTS . . . a half-million more tons of the same uniformly dependable steel that has made *Inland Quality* the recognized standard among manufacturers throughout the great Midwest. Inland's giant, new 4-stand tandem mill, most powerful of its size in the industry, is part of Inland's program of expansion, keeping pace with the growth of Midwest manufacture. New pickling, continuous normalizing, annealing and tempering facilities do their part in producing this quality steel for your use. This new capacity means better service for you from Inland.

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MARKET-PLANNING DIGEST

LOOKING FOR NEW PRODUCT IDEAS? Here's what James M. Flounders, director of new products development, B. F. Goodrich Industrial Products Co., says: "Best source of new ideas for new products is an engineering working arrangement between a manufacturer and any customer who has a problem."

L-P GAS SALES POTENTIAL is still growing, say Phillips Petroleum experts. Several summer "load builders" still await development: Crop drying, flame weeding, summer air conditioning, asphalt heating, and aggregate drying.

LOWER TUNGSTEN CARBIDE PRICES are opening up new industrial outlets for this material. So says Philip M. McKenna, president of Kenna-metal, Inc. He points out the world price of tungsten dropped from \$40 a short ton unit to a low of \$8 in 1958, exclusive of \$8 import duty.

ROLL FORMING OF METAL STRIP from powder is nearing commercial production. Metal Powder Industries Federation reports that commercial roll forming mills are scheduled to start up in '59. Large tonnages have been turned out in pilot plants.

INDUSTRIAL LEASING MARKET is reaching for a \$300 million year in 1959. Metalworking's investment has been growing, hitting \$12 million in '58, up from \$9 million in '57. Some firms are selling their products through leasing plans.

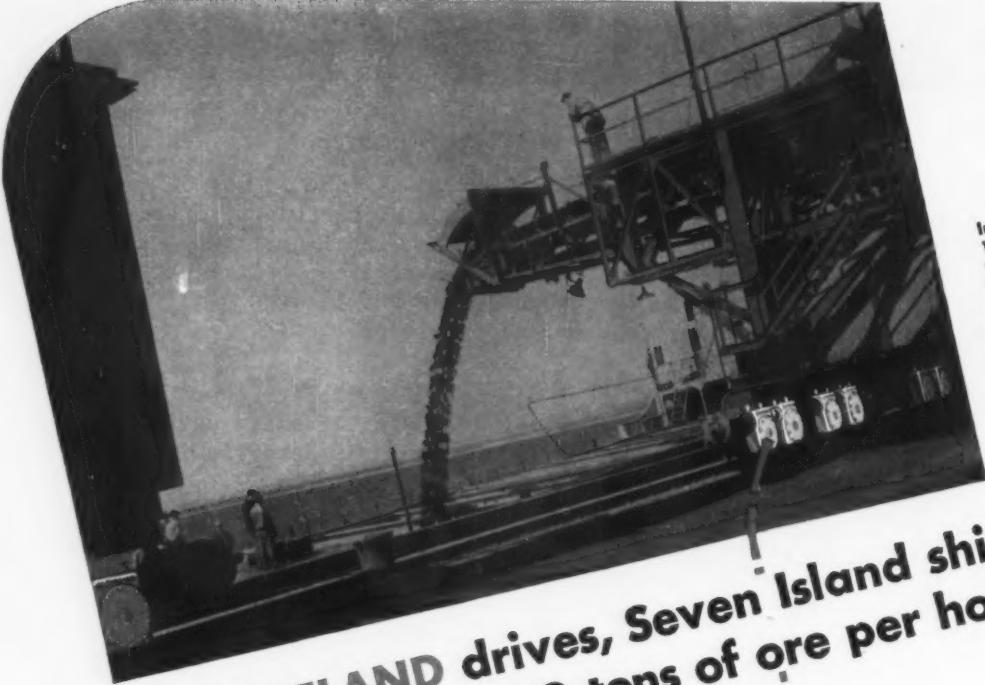
NEW ALUMINUM-PLASTIC "SANDWICH" may have wide applications in industry. Developed by Aluminum Co. of America, it's already being used by Westinghouse in refrigerators. Panel consists of expanded plastic beads sandwiched between aluminum sheets.

STEEL PLATE MARKET is tightening up. A Midwestern mill already is doling out plates to its customers on an allocation basis. Other mills say their plate order situation is moving in the same direction.

PENTAGON ECONOMY DRIVE in missiles procurement seems to be hitting air-breathing missiles hardest. Regulus II joins the Rascal and the Goose on the contract cancellation list.

PLASTICS INDUSTRY IS GROWING. A survey by the Society of the Plastics Industry shows that 221 companies have made growth plans for 1959. In 1958 only 145 firms said they planned to expand.

INVENTORY BUILDING WILL HELP '59 business prospects. Dept. of Commerce's Louis J. Paradiso looks for a \$3 billion buildup during the year. This compares with a \$6 billion decline in 1958. Mr. Paradiso expects most of the accumulation will occur during the first six months.



In service since July, 1954, these drives were manufactured by Cleveland's Canadian licensee, Peacock Bros. Ltd., with worm gear sets supplied from Cleveland.

With 32 CLEVELAND drives, Seven Island shiploaders can handle 8,000 tons of ore per hour

THIS monster shiploader and its twin each have an hourly rated capacity of 4,000 long tons. The two machines thus can load 12,000,000 tons or more during the normal shipping season.

Rich brownish-red iron ore from Labrador and Quebec promises to play an increasing part in supplying the steel mills of the Free World—and in loading every ton of it, Cleveland Worm Gear Speed Reducers are a part. In the photograph showing one of the loaders have a part. In you can glimpse seven of the 32 specially built Cleveland loaders. Through them power from the legs of the frames carrying the belt conveyors for quick, accurate delivery of ore into the holds of waiting ships.

Whatever your power transmission job, there's a Cleveland to do it surely, safely, efficiently, economically. Write for Catalog 400. The Cleveland Worm & Gear Company, 3282 East 80th Street, Cleveland 4, Ohio.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.



Industrial Leasing Reaches For \$300 Million Market in '59

Metalworking firms alone spent \$12 million for leased equipment in 1958, up 33 pct from '57.

National Industrial Conference Board survey shows growing interest in leasing.—By G. G. Carr.

■ More metalworking companies are turning to rental plans for production facilities, new studies reveal. Total dollar volume of equipment now on lease to metalworking is estimated at \$12 million, a gain of 33 pct over the \$9 million figure a year ago.

For all industry, dollar volume

of leased equipment is now \$227 million, up \$47 million or 26 pct in one year. In releasing these estimates, Robert Sheridan, president, Nationwide Leasing Co., Chicago, predicts that "total dollar volume of equipment on lease by the end of 1959 will top \$300 million."

Trend Is Up—Added support for Mr. Sheridan's study comes from a new survey of leased equipment by National Industrial Conference Board. Of 221 manufacturing companies answering NICB's survey, 31 report higher rental activity (relative to overall operations) than 5 years ago. An additional 40 firms indicate higher leasing activity without reporting relationship to

business volume.

Of the remaining 150 companies, 110 have had no increase in rentals, while 7 report a decrease. The remaining 33 do not specify any trend.

Cars and Trucks Lead—Car and truck rentals show the greatest increase over the past 5 years, with warehouse and plant facilities also contributing substantially to the 5-year rise. Production machinery and machine tool rentals show some increase, but are still a small part of total rental volume. Office equipment, particularly more expensive machines, is a hefty part of overall rental outlays, but such rentals have been for some time "the cus-

How Management Looks at Industrial Leasing

Machine Tools

"Our government is gradually and at long last taking a more enlightened attitude toward depreciation allowances. The present tax laws are still a long way from the most desirable depreciation allowances, but they have been improved over the past few years. As the tax laws allow more intelligent depreciation schedules they reduce correspondingly the incentives for leasing capital equipment"—President, machine tool company.

Gages

"If the product were sold to the customer, it would be priced out of reach of many small precision shops, so we feel that the leasing

arrangement will give us a much better marketing basis. This arrangement has worked out satisfactorily for the past two and one-half years, and we expect that the market will expand materially in the future"—Manufacturer of special gaging equipment.

Warehouses

"Our decision to lease or purchase warehouse buildings hinges on the use or cost of money. We can earn more on money invested in our steelmaking facilities than we can when invested in warehouse buildings"—President, steel company.

"We have a mixed policy in respect to warehouses, owning our land and buildings in key areas, and

leasing in those which are not so directly related to our plans for future expansion or growth in a specific area. For example, in two cities our company has made a very substantial investment in warehouse facilities, whereas in another we are leasing our facilities"—Vice President, industrial machinery company.

Office Equipment

"In several cases, purchase terms compared with rental rates made ownership somewhat attractive, but flexibility of rental, complex maintenance problems, obsolescence of equipment, and procedure revisions were intangible and important considerations favoring rental"—Oil company executive.

What Industry Is Leasing

Equipment

Air conditioning, airplanes, autos and trucks, bottle capping machines, business machines, canning machines, construction equipment, dispensing equipment.

Fire trucks, generators, lift trucks, machine tools, material handling equipment, office equipment, packaging machinery, precision gauging equipment, railroad maintenance equipment.

Railroad tank cars, riveters and stitchers, road tar distributors, sewing machines, shoe machinery, spe-

cial textile machinery, sprinkler systems, standard metalworking machinery, strapping machines, tankers and marine equipment, tires, trailers.

Real Estate

Branch sales offices, manufacturing space, office space, retail locations, warehouse space.

Other Facilities

Airplane hangars, government facilities, pipe lines, retail outlets, rights of way, service contracts.

tom of the trade."

While almost a third of the respondents report more rental activity, they also point out that leasing is not always the cheapest path to new facilities. But cash position, possible tax savings, and special circumstances may make leasing the preferred policy.

Sales Through Leasing—Cautious approach to leasing is also reflected by companies considering selling their products through rental plans. But 10 out of 127 companies with rentable products are now considering offering rental schemes while 30 of the 127 companies already offer their products on that basis, the NICB survey finds.

Most of the 221 manufacturing firms answering the survey believe that the main advantage of leasing is to conserve working capital. But a variety of other advantages are cited (P. 27 table). Principal deterrents to rental are reported as (1) relative high cost; (2) improved depreciation allowances on owned property; and (3) uncertainty of tax benefits under lease agreements.

The Cost Angle—Leasing is rarely justified on a cost basis, as most renters raise prices to cover higher risks and selling costs. Cars,

trucks and buildings appear to be the most common exception to the higher cost factor. But many firms find that avoidance of maintenance and obsolescence compensate for the higher cost.

Tax and depreciation benefits from renting are uncertain, the survey finds. Several firms abandoned leasing plans after lawyers were unable to write satisfactory agreements which would still meet Internal Revenue Service requirements. State taxes can also be a factor; Ohio, for example, assesses leased machinery in the hands of a lessor at 70 pct of value against 50 pct of value in the hands of an owner using such machinery directly in his own operation. Also, a 3 pct sales tax is imposed on machine rental payments in many instances.

More Firms Interested—Of 127 companies with rentable products, 30 offer some form of rental sales promotion. Of the 30, two-thirds do not expect any great change relative to overall sales volume, while the remaining third look for increased rental percentages. Eighty of the 97 companies without rental plans do not expect to start such programs, while 10 firms are considering them. Of the 221 participating companies, 94 believe their

products are unsuitable for rental.

Many of these 94 firms feel that their products could not be rented because they are either consumed directly or become a part of some other company's product. Also, the nature of some products makes rental pricing difficult. Another deterrent is low unit price, while still other firms hesitate to rent products with a limited salvage or rental value.

Rentals Broaden Market—But general increased interest in leasing has caused a number of companies to leave the door open for the future. Need to meet competition is often cited. Others have offered such plans but report little interest. Some companies point out that customers big enough to need their products almost always can afford to pay for them.

This is not an invariable rule, however. While there is considerable agreement that general-purpose equipment is most suitable for leasing, one maker of specialized gages sells exclusively on a rental basis. He explains that renting allows him to reach many small precision shops which otherwise could not afford his gages.

Servicing a Selling Point—Rental programs appear to have special merit for products which require constant and skilled servicing. The survey found these advantages mentioned specifically for office and gaging equipment. The president of a company making specialized machinery also believes that leasing is the proper marketing method for complicated products. He says: "We do not look on ourselves as selling a piece of equipment; we are providing a service."

Some manufacturers provide rental programs on an indirect basis by offering their products through a leasing company. Such companies feel that leasing presents a whole new set of problems which can best be handled by specialists. Also, the use of rental companies avoids a heavy cash burden, a factor with smaller producers.

Titanium's Recession Is Over

All Predictions Are for a Brighter Sales Picture

The industry has been scrambling since the low point in the last two months of 1957.

Technical advances and lower prices are expected to spell improved business through 1959.—By F. J. Starin.

■ The titanium industry is looking for 1959 to be the year of the comeback.

Titanium Div., Crucible Steel Corp., for instance, predicts "a moderate upturn in business." Titanium Metals Corp. of America says the industry has already "begun to pick up substantially from the low point of late 1957." And Frank Vandenburg, president, Mallory Sharon Metals Corp., says, "The profit outlook should improve."

Titanium hit the skids in the last two months of 1957, after a steady, sometimes spectacular, growth since its birth less than a decade ago.

Low Point — Mill products shipments that year averaged a little less than 500 tons per month. But cutbacks in military aircraft, and generally large customer inventories, dropped shipments in November and December to less than 100 tons each month.

Titanium mill products shipments in 1958 averaged 200 tons per month, estimates T. W. Lippert, director of marketing, TMCA. This is twice the low point in the last quarter 1957, but still less than 50 pct of 1957 as a whole.

Expected — Concrete estimates for 1959 are hard to come by, and tend to vary widely. A consensus appears to be that shipments will average close to 300 tons per month.

The industry is in solid agreement on the reasons for the brighter outlook.

One of the most important: The

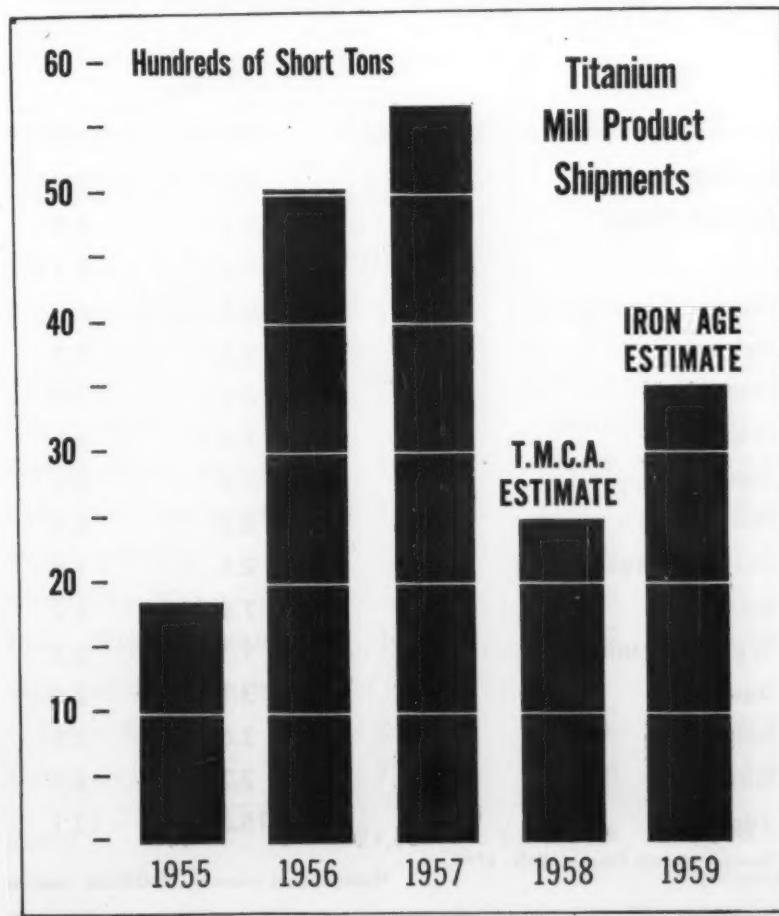
long term development of titanium's major markets hinges, to a large degree, on the industry's technical progress. Crucible's titanium people call the technical work done in 1958 a "marked advancement." Mallory Sharon's Vandenburg promises, "Large sums of money will continue to be spent in research and development."

More concretely, TMCA's Lippert points out that since 1955 the industry has had an uninterrupted record of bringing out at least one new sheet alloy each year. In 1958 Ti-4A1-3Mo-1V, with a tensile

strength of 170,000 psi became commercially available. This year alloy sheet with a tensile strength of 210,000 psi, called All-beta, will be on the market.

Price Helps — The price picture is the second major consideration that is convincing the industry better times are just ahead. According to Titanium Metals Corp. the mill products composite price index in 1958 dropped to \$8.66 from \$10.55 in 1957. A recent reduction is likely to move the composite still lower this year.

The Forecast Is For Recovery



Are Reds Winning Output Race?

Russia Boosts Worker Output 8-10 Pct a Year

During recent ten-year span the U. S. increased productivity about 2.8 pct a year, according to economists.

However, in same period the USSR raised worker output between 8 and 10 pct a year.

In the drive to increase productivity, the Reds appear to be outstripping the U. S.

That fact was stressed during

last week's meeting of the Joint Social Science Associations in Chicago. The Soviet Union has boosted productivity 8-10 pct a year in the 1948-1957 period, according to Marvin Frankel, University of Illinois economist. (See table below.)

Tripled by Reds—However, during the same span of years U. S. productivity increased only about a third of the Russian rate—2.8 pct a year. Other top nations in boosting worker output in the

1948-1957 period: Western Germany, 9.3 pct; Italy, 8.8 pct; and Poland, 8.6 pct.

Another speaker at the meeting—John W. Kendrick, George Washington University economist—believes U. S. gains in employee output were only possible because of record capital investments in new plants and equipment. For further output growth at that rate of gain, he says, even greater capital investments will be needed. The reason: The return on capital is falling in relation to capital input.

Real productivity in the U. S. advanced 2.1 pct a year during a thirty-eight year period, according to Mr. Kendrick. However, it slipped to a 1.8 pct average gain per year in the 1950-57 period. Output per labor hour went up 2.4 pct a year during the 1950-57 span, but real average hourly earnings rose 4 pct a year.

Growth in Industrial Output Per Employee

	Pct a Year		
	1938-1957	1948-57	1950-57
United States	2.3	2.8	2.0
Soviet Union	2.7*	8.1*	6.0*
	5.9**	10.0**	8.1**
Czechoslovakia	3.2	6.5	6.2
Poland	3.9	8.6	8.2
Italy	3.8	8.8	7.4
France	2.7	5.8	6.1
Sweden	2.1	3.0	2.9
Norway	1.6	5.2	4.5
United Kingdom	1.2	2.6	1.9
Austria	1.3	7.8	5.0
West Germany	0.8	9.3	5.2
Denmark	0.4	3.1	2.9
Belgium	0.3	3.0	2.8
Canada	—	2.3	2.1
Japan	—	15.3	13.1

Source: Marvin Frankel, Univ. of Ill.

*Independent sources **Official sources

Below Labor Raises—Within the U. S. productivity gains have been confined to a relatively restricted group of industries. These have absorbed more of the labor force, gained more of the total U. S. market, and raised prices less than industries which have not shown productivity gains.

The frequently stressed fact that U. S. productivity is not matching wage raises got attention at the session. Jules Backman of New York University noted that output per manhour gained only 0.4 pct in 1956 and 0.8 pct in 1957.

More Wage Boosts—But average hourly earnings rose 5.3 pct in '56 and 4.5 pct in '57. Mr. Backman predicts base wages will advance as much this year as in 1958. However, total wage costs won't rise as much. This is because cost-of-living increases are not expected to match the 5-6 cent level of '58.

Steel Capacity Hits New Mark

■ Total steelmaking capacity of U. S. mills reached a record 147,633,670 net tons annually as of Jan. 1, 1959, the American Iron and Steel Institute reports. It is an increase of nearly seven million tons over last year.

The new 147.6 million tons figure is 61 pct higher than the potential at the end of World War II, and over 30 million tons above the steel industry's greatest annual production of 117 million tons reached in 1955.

Oxygen Contributes—The capacity has gone up for 12 consecutive years and, says AISI, is increasing faster than the population, which is 28 pct higher than on Jan. 1, 1946.

A substantial amount of the increase during 1958 was attributable to the installation of new oxygen equipment in several steelmaking plants, AISI explains. Annual capacity of oxygen furnaces is now 4,003,160 tons, compared with 1,081,000 net tons at the start of 1958.

Openhearts Gain—However, openhearth furnaces capacity increased 4.2 million tons. These furnaces account for over 85 pct of the total annual steel capacity figure. The combined capacity of openhearts is 126.5 million net tons per year, against 122.3 million tons one year ago.

Capacity of electric furnaces is now about 13.5 million tons, compared to 13.3 million tons at the beginning of last year. Bessemer steelmaking capacity has dropped to 3.6 million tons, against 4.0 million tons a year ago.

More Pig Iron—Blast furnace capacity has also reached a record high level of 94,634,850 net tons annually, AISI says. This is an annual increase of 3.6 million net tons in the past year. The industry's coke oven capacity is now rated at 73,098,310 net tons a year, against 72.2 million tons in 1958.

NEMA Prediction: \$21 Billion Year

■ Electrical goods makers are hoping history won't repeat itself.

The National Electrical Manufacturers Assn. figures the industry will ship almost \$21 billion worth of goods this year. This would put 1959 in the class with the peak years of 1956 and 1957. And it would top 1958 by about seven pct.

But the electrical manufacturers were optimistic going into 1958. When all the returns are in they are likely to show a 10 pct drop in shipments from 1957.

Share In Rise—All of the eight specific, and one catch-all, categories in the industry expect to move up this year.

Companies making illuminating equipment, communications equipment, and electrical products for

building, fared best in 1958.

This year, makers of illuminating equipment expect a six pct gain in shipments; building equipment people are looking for eight pct better business; and communications equipment makers hope to inch up by about one pct.

Appliance Picture—Overall, appliance shipments were off nine pct in 1958 from the previous year. But some racked up increases. Built-in electric range shipments were up 26 pct, and food freezers rose 19 pct. The forecast this year for the industry is for an increase of seven pct.

Others expecting to be big winners in 1959 are wire and cable makers, industrial apparatus people, and many in the catch-all category.

Forecast in Detail

Millions of Dollars

Electrical Products	1957	1958*	1959*
Appliances	\$4138.8	\$3756.3	\$4007.2
Illuminating Equip.	872.9	855.8	906.9
Communications Equip.	1345.7	1345.7	1353.8
Industrial Apparatus	3153.2	2731.1	2918.8
Building Equip.	713.7	648.8	698.4
Insulating Materials	340.4	303.5	336.0
Insul. Wire & Cable	1638.6	1307.5	1411.5
Generation, Transm.,			
Distr. Equip.	2356.1	1998.6	2039.9
Other	7084.1	6517.4	7104.0
Total	\$21,643.5	\$19,464.7	\$20,776.5

Source: NEMA

*Estimate

New Sandwich Panel

■ A new construction panel made of expanded plastic beads sandwiched between sheets of aluminum has been introduced by Aluminum Co. of America.

Offering strength, light weight, highly efficient insulation, and economic workability, Alcoa sees unlimited possibilities for its new product. It will be especially adaptable in the design and construction of appliances, homes, buildings, trailers, and a host of other applications, Alcoa says.

Try-Out Successful—Named "Alply," the panel core material is produced from expandable polystyrene beads which form a white, opaque, and odorless material. It has no food value for plant or animal life. It also is non-toxic and self-extinguishing, Alcoa claims.

Westinghouse Electric Corp. already is producing refrigerators made of the new panels, and with excellent results.

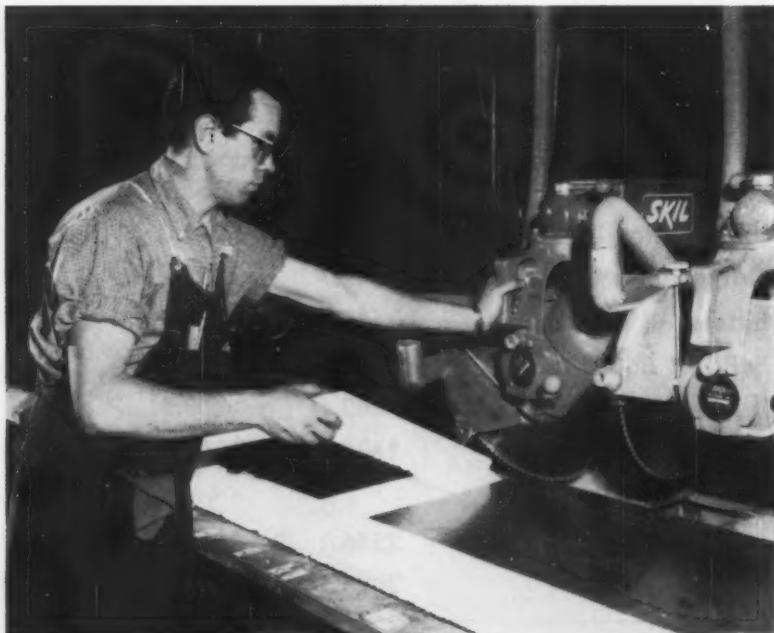
Cuts Tooling Cost — The panels

permit a new method of manufacturing, says J. W. Craig, Westinghouse vice president. Tooling costs are very low and the panels permit profitable production of small quantities of special models.

"To tool a new outer cabinet of steel costs anywhere from \$500,000 to \$1,500,000. The cost with the sandwich construction method is no more than \$3,000," Mr. Craig said.

In the fabricating method, panels are supplied to Westinghouse by Alcoa in rectangular shapes cut to size for the particular refrigerator being produced. Ordinary electric saws notch out or miter the corners. The sandwich is then folded into the cabinet shape and the corners are sealed with polyurethane foam. With the cabinet completed, the balance of the refrigerator is assembled by conventional methods.

Alcoa says the panel will be made in widths up to four feet and in unlimited lengths. Thicknesses range from one to six inches.



EASY WORKABILITY: Panel sandwich made of polystyrene beads between two sheets of aluminum is mitered and notched with radial arm saw at Westinghouse plant. Afterward, it is bent into refrigerator cabinet.

GM Settles Cost Fight With Uncle Sam

General Motors Corp. has concluded a long, cost accounting controversy about government contracts by repaying some \$9.9 million to Uncle Sam.

In the \$9.9 million total, say Justice Department officials, is \$4.9 million overpaid to GM through accounting errors and "misstatements of costs" in pricing proposals. GM agreed to repay the \$4.9 million and voluntarily returned another \$5 million in alleged excess profits. The \$5 million figure actually amounts to about \$2.1 million after taxes.

The controversy involved a 1952 Air Force jet plane contract.

GM, in making the repayment, insists it has never "wilfully made any misrepresentations of its costs and its settlement payment was based on the difference between estimated and actual costs."

Frederic G. Donner, GM chairman, says the settlement is based on a proposal "initiated by General Motors." He adds the controversy was the result of a misunderstanding between the corporation and Air Force contracting officers, and the firm "does not wish to profit through a misunderstanding."

He also points out that the Air Force has commended GM's performance on the contract as "phenomenal" despite extreme manufacturing difficulties.

The Air Force also moved last week to cut back production on its B-58 bomber.

Under reduced delivery schedules only 36 more of the planes will be purchased at this time from Convair Div. of General Dynamics Corp. Originally plans called for buying 47 planes by this June.

However the Air Force insists higher costs and design changes permit buying only 36 planes. While production costs of the B-58 are closely guarded secret, unit cost of a plane is expected to be about \$5 million when production improves.

Iron Ore Producers To Boost Pellet Output

Many blast furnace men quietly report pelletized ore is letting them chalk up all-time highs.

For instance, one steel producer last year achieved a 47 pct increase in capacity on a 1940 blast furnace with beneficiated ore, burden sizing, and oxygen enrichment.

So a healthy demand for pellets is building up, and ore producers are expanding to meet it.

More Ore — Latest expansion: Humboldt Mining Co. is adding a 640,000 ton pelletizing plant. Output, starting in 1960, is already on allocation. Humboldt is owned by Cleveland Cliffs Iron Co. and Ford Motor Co. Ford will get about half the pellets.

The much-publicized billion ton Canadian Javelin project in Labrador is getting off the ground. Pickands Mather Co., Cleveland, announced that initial contracts are being let for a 42-mile rail spur to the deposit.

New Pellet — At Humboldt a new type pellet—denser and stronger—will be turned out. Iron content will be about 63 pct, upgraded from the natural 40 pct hematite.

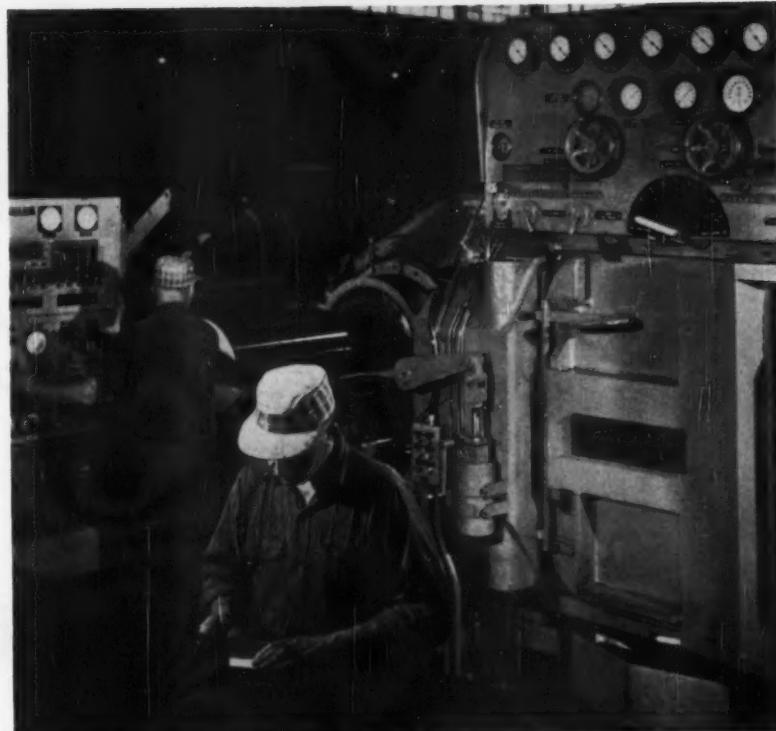
Harder pellets are less likely to break in storage, and increased density is expected to boost blast furnace yields. The present 320,000 ton flotation process concentrating plant will be doubled in size to furnish enough concentrates for the pellet plant.

Pelletized iron ore weathered last year's steel industry recession pretty well. Reserve Mining Co., Silver Bay, Minn., shipped 4.9 million tons against 5.1 million in 1957. Erie Mining Co., Aurora, Minn., just getting into production, jumped from 113,674 tons to 2.6 million and is scheduling over 5 million tons for 1959.

Expand Tin Mill

The Youngstown Sheet and Tube Co. will build a second continuous

Nerve Center of a New Mill



PROGRESS: This is the control panel and roll housing of a new 50-in. Sendzimir cold rolling mill installed at the Brackenridge, Pa., works of Allegheny Ludlum Steel Corp. in 1958. The mill can roll stainless steel and titanium to thinner gages and closer tolerances.

annealing line for its No. 2 tin mill at its Indiana Harbor, Ind., works.

Preliminary engineering is almost finished. Construction will start very soon, with completion scheduled for 1960.

Purchasing Agents View 1959

There's no boom in sight. But business in 1959 will be better than it was last year. That's the conclusion of the Business Survey Committee of the National Assn. of Purchasing Agents.

On their last monthly survey, 86 pct of the replies expected better business this year, compared to only 4 pct who expected a drop.

When? — The group is not quite sure when this improvement will come. Over half, 54 pct, say the first six months, the rest the last six. But the NAPA feels the difference is

too small to be conclusive.

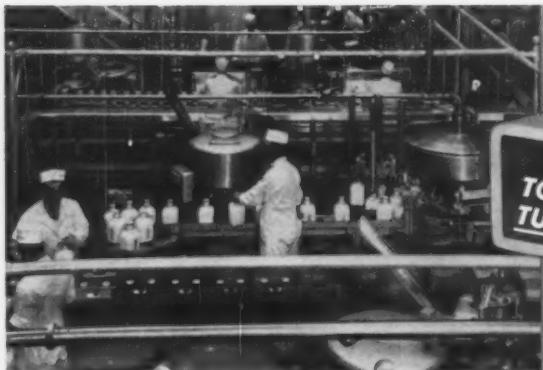
The survey also indicated 1958 did not go out like a lion. Only 32 pct of the replies told of more new orders in December, compared to 47 pct in November. A poorer new order position was reported by 21 pct, compared to only 13 pct the previous month.

Tariff Case to Court

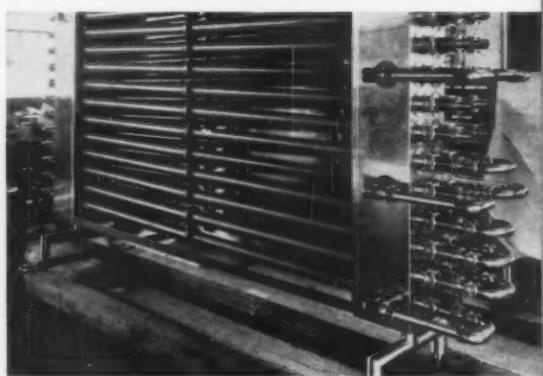
Atlantic Steel Co. has challenged, in the U. S. District Court, a recent Tariff Commission refusal to consider higher tariffs or quotas on imported barbed wire.

The firm asserts the commission acted illegally by dismissing its application for an investigation.

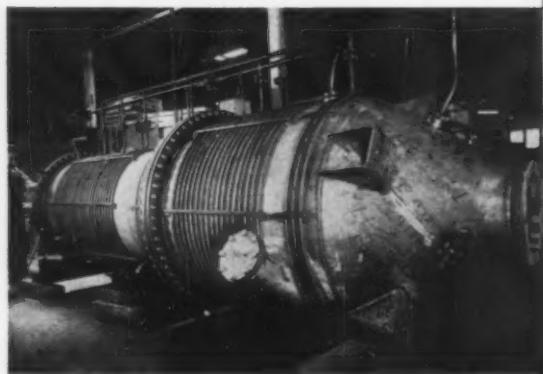
The commission turned down the application because barbed wire is covered by specific legislation designed to insure cheaper prices to farmers. This overrides the normal tariff acts, the commission says.



In dairy products, sanitation, non-contamination, heat and cold requirements dictate welded stainless steel tubing.



The uniformity, concentricity and dimensional accuracy, and easy fabrication of welded tubing serve best in this condenser.



This all-stainless steel resin distillation unit relies on welded stainless steel tubing for all tubular components.



Because of formability and resistance to heat, pressure and corrosion, welded stainless steel tubing makes up the greatest part of this valve—eliminates castings.

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TO DESIGN WITH
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WHEN YOU MUST COMBAT

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- HEAT
- CONTAMINATION

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In all these applications for tubing, the uniformity, concentricity, dimensional accuracy and wide range of sizes, shapes and grades of *welded* stainless steel tubing serve best.

It's time to design with tubing from your quality *welded* tube producer.



Specific information on welded tubing is available on request to:

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An Association of Quality Tube Producers

Archie Cochran

Heads New Aluminum Challenger

Mr. Cochran is heading up the aluminum industry's newest competitor.

Anaconda Aluminum Co. is tossing its hat into the market for real.

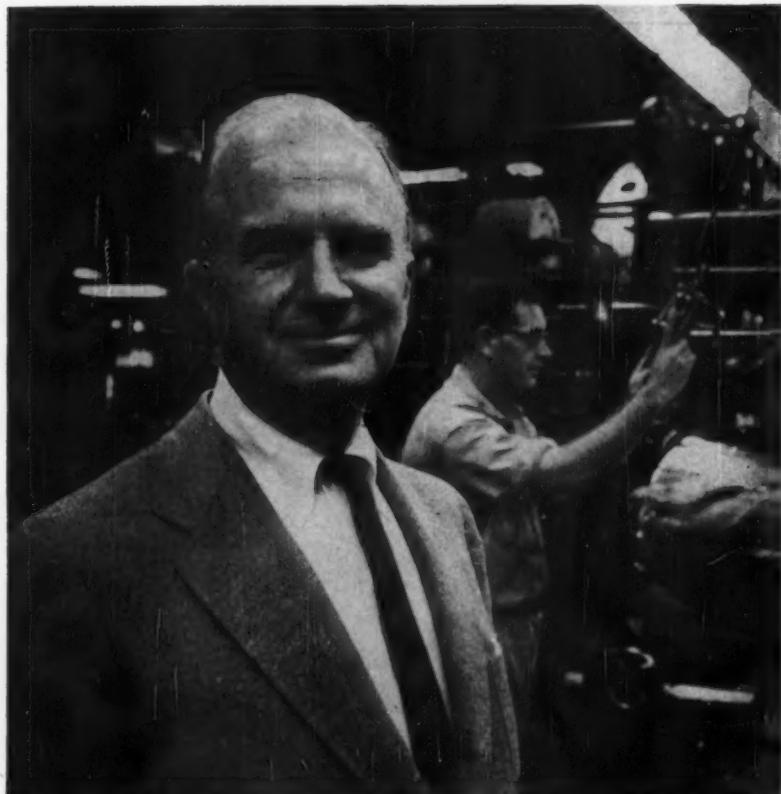
■ Anaconda Co., a name long associated with copper, is going into the aluminum business in a big way—and the company is counting on Archie Cochran to lead the charge.

This week Anaconda swept all its budding aluminum holdings into a single autonomous subsidiary and turned the reins over to Mr. Cochran. As first president of Anaconda Aluminum Co., he controls an organization with assets of over \$140 million. Its facilities consist of a reduction plant at Columbia Falls, Mont., a sheet, strip, rod, tube, and extruded shapes mill at Terre Haut, Ind., and foil and container plants at Louisville, Ky., home base for the new firm.

His Formula—Mr. Cochran will go after a large chunk of the aluminum market with the same formula that has worked for him before — hard work, adaptability, and business agility. Throughout his career, successful application of these principles shows through.

For instance, although he holds a mechanical engineering degree from Massachusetts Institute of Technology (class of 1920), Mr. Cochran started as a helper on an aluminum rolling mill. He worked factory hours for eight years learning the business from the ground up.

Builds a Company — In 1939, Archie Cochran organized his own firm—Cochran Foil Co. He was able to finance the company by



ARCHIE COCHRAN: You have to change with the times and markets.

floating a stock issue for \$340,000. By the time Anaconda bought his company in 1958, he had parlayed the original capital investment to a worth reputed over \$9 million. It's developing that Mr. Cochran himself may be the most important asset acquired by Anaconda when it purchased Cochran Foil.

Ready for Change—One of his strongest points is his ability to put together a smooth working organization. His secret: A willingness to tamper with a winning combination. Times and markets change, he says. You have to change your set-up with them.

In research, Mr. Cochran prefers "the crew cut variety not too far

from the shipping room door." It is not unusual for a researcher in a Cochran-run operation to travel with a salesman to see what customers would like developed.

A Hand to Salesmen—Where his own talents may help land an order, Mr. Cochran does not hesitate to hop in the company plane and call on a potential customer. Red tape, especially for salesmen, is kept to a minimum.

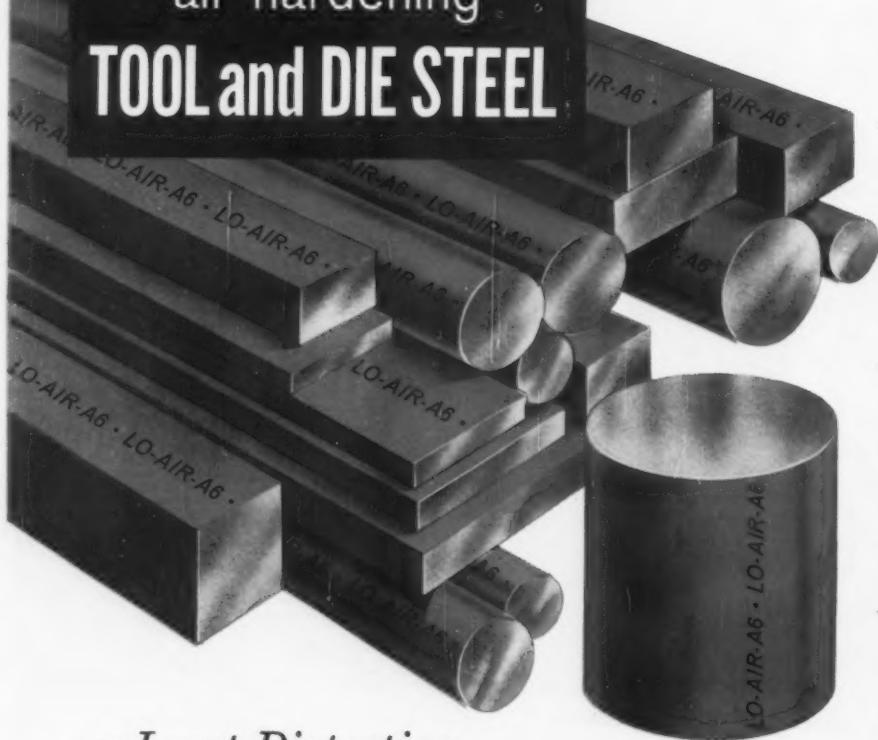
Anaconda Aluminum is making its debut in a favorable market atmosphere. The aluminum industry forecasts shipments in 1959 will increase from 10 to 20 pct. Archie Cochran and his new firm will be out to get their share.

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- Least Distortion
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New from Universal-Cyclops, LO-AIR is an air hardening tool steel remarkably free from distortion in hardening. Even more remarkable is its ease of machining. Now you can combine the simplicity of hardening and ease of machining typical of oil hardening tool steel (AISI 01) with the safety of an air hardening grade. Write for our descriptive brochure No. TS-101, or better yet order a bar from your nearest Universal-Cyclops sales office or warehouse. Complete stocks are available.

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EMBOSSING

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PIERCING

Will Buying Follow Pay Upturn?

Sharp increases in factory workers' spendable earnings reflects improved business in metalworking.

Better earnings should help keep the recovery going with added consumer confidence.

■ One of the most significant evidences of the recovery in metalworking is the sharp increase in factory workers' earnings.

It's a direct reflection of the longer hours and, to a lesser extent, higher wage rates. Most of the negotiated pay increases in major elements of metalworking went into effect during the summer. But intermittent work stoppages kept them from showing up on the overall earnings rates until the recovery picked up steam and strike problems were ironed out.

New Records—Factory workers' spendable earnings jumped \$1.30 per week between October and November, indicating the sharp increase in factory operations. It pushed the figure for spendable earnings to new records. And these records will probably fall by the wayside in December and January.

What is particularly important is that the increase in earnings jumped much higher than the rise in Consumer Price Index. The result was a better than 1.5 pct increase in the factory workers' buying power in one month.

Price Paradox—A sideline of the price picture is the paradox that prices made their major increases in the past year during the down-trend of the recession. They have held relatively steady since the recovery became apparent.

Buying Next?—The increase in factory worker spendable earnings should have a beneficial effect on overall business conditions. With paychecks up and confidence returning, some of those long deferred purchases may be made.

Throughout the course of the re-

cession, earnings of service workers continued at a high level, as did those of most of the non-durable goods workers. The \$1.30 per week increase in weekly spendable earnings came almost entirely from the metalworking industries, which are just getting back on their feet.

Little Help for Small Business

Election No Help—If your company comes under the heading of "small business," don't count on any special favors from Congress this year.

Although Democratic candidates have made big pleas for the small business vote in recent campaigns, outcome of last November's Congressional elections isn't going to do much for small business.

In fact, Congressional experts warn that small business will not enjoy the favored position in 1959 that it has had in the past two years. Cost to the government, plus lack of interest by the politicians, will work against small business legislation this year.

Minor Measures—There may be some small tax benefits to small firms, however. But they will be minor.

Sen. Sparkman, chairman of the Senate Small Business Committee, has proposed a four-point small business tax program which includes only one major provision.

Proposals Listed—This is a proposal to give a tax reduction on a portion of retained earnings reinvested for expansion and modernization. Similar plans sidetracked last year would limit the deduction to \$30,000 or \$50,000 a year.

Other proposals would allow self-employed to set up their own retirement plans and pay taxes when funds were drawn; permit tax deductions on used equipment or fixtures; and require the government to accept decision of the tax court in all jurisdictions.

GNP Loses Its Inflationary Factor

Putting Gross National Product on a "constant dollar" basis has restored this inflation-hit government statistic to good standing in the family of economic indicators.

As you know, the GNP figures compiled by the Office of Business Economics, previously were not adjusted for price change. Under the new system, GNP figures will be released in terms of both "constant dollars" and "current dollars." Basis of constant dollars will be 1957.

For the record, third quarter GNP in current dollars hit an annual rate of \$439 billion and fourth quarter figures are expected to be well above the pre-recession peak of \$446 billion annual rate reached in the third quarter of 1957.

In constant dollars, third quarter rate was \$428 billion. The fourth quarter rate is still expected to come close to the 1957 high.

INCREASED PRODUCTIVITY

not merely INCREASED PRODUCTION

will widen your profit margins

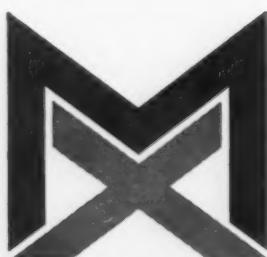
Testing offers a new production tool to increase productivity at very low cost. Early detection of all parts headed for the scrap heap enables you to take corrective action *before* additional machining costs are invested in them.

THE PRODUCTION MANAGER will be able to maintain established quality levels (or meet new higher standards)—eliminate intermittent excessive scrapping of finished parts and often even reduce normal parts scrappage.

THE SALES MANAGER will benefit from consistent reliable quality—increased customer satisfaction—reduced or stabilized costs—increased competitive ability.

HIGHER PROFIT PERCENTAGE will result because the returns will be increased from your present man-hours and plant investment.

Can you afford to overlook these benefits? Write today for a free copy of "Lower Manufacturing Costs", an informative booklet. Or, ask our Field Engineer to discuss where and how low-cost Magnaflux Test Systems have helped others increase plant productivity.



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Manufacture Overseas to Reach Europe's Expanding Market

By W. F. Rockwell, Jr., President, Rockwell Manufacturing Co., Pittsburgh

Establishment of European Common Market and free trade areas makes it more difficult for U. S. firms to compete abroad.

But vast new markets are developing. They can best be reached by locating plants overseas.

■ When the European Common Market went into effect January 1, it put up another barrier between America and world markets.

Tariff restrictions in the ECM

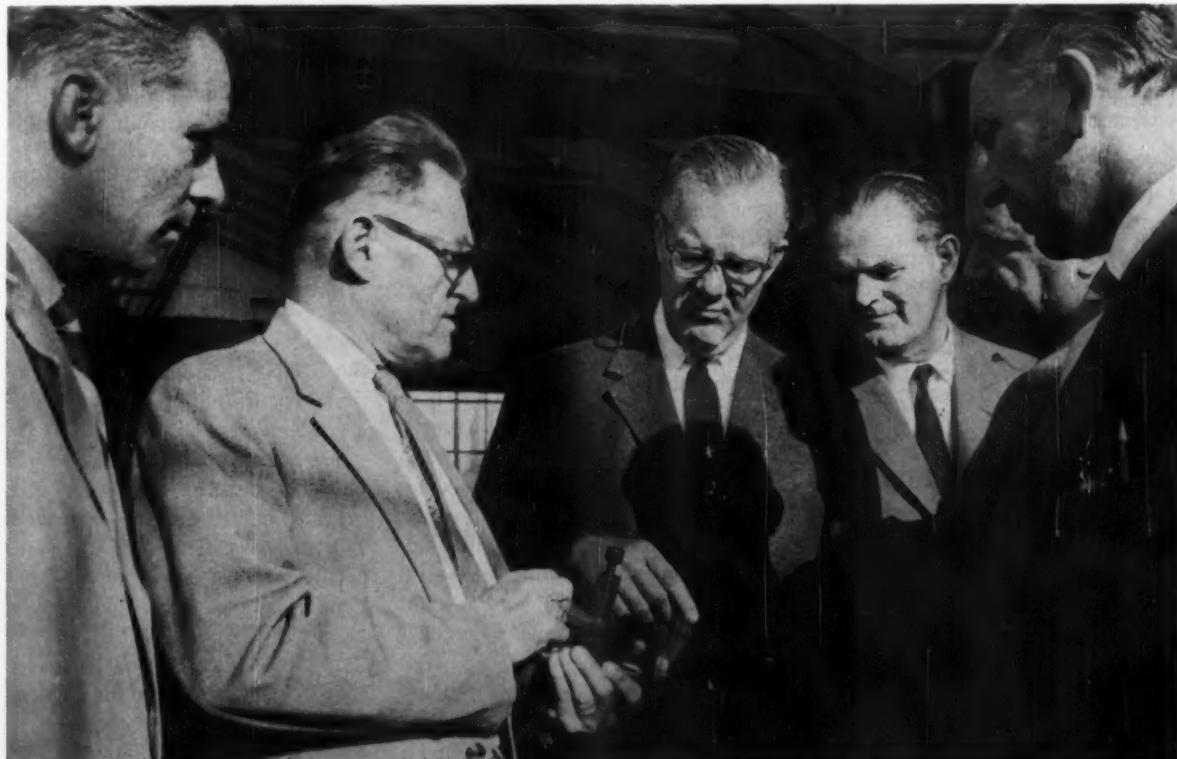
and in the 12-nation Free Trade Area, combined with lower labor costs, will virtually kill American trade to Europe and increase competition elsewhere.

Even if the plans lag behind the 12 to 17-year schedule for removal of international tariff barriers (IRON AGE, Sept. 18, 1958), America will lose one of its highest trumps in world business. European manufacturers will be able for the first time to develop a mass market similar to America's as a base for export operations.

Must Go There—High cost and selling prices of American-made products, plus world-wide dollar shortages and customer barriers, are already forcing U. S. industries out of world competition.

Manufacturing within the European unified market, I am convinced, is the best way an American company can hold and expand its overseas business.

Europe's mass production market may expand right into America's own back yard. And America's trend toward lower tariffs



AT THE SCENE: W. F. Rockwell, Jr., center, inspects work done at Breda plant, licensee in Milan, Italy.

"It offers American manufacturers the greatest market opportunities since the railroads linked the U. S."

increases possibilities of massive competition from imports. If competition ever requires it, the American manufacturer with a plant in Europe can compete on an equal basis with the European company for the U. S. Market.

Mass Market Potential—At the same time, a new trade area of 240 million people striving to attain the benefits of a mass production economy offers American manufacturers the greatest market opportunity since railroads linked the United States. Recent changes in convertibility make European operations even more attractive.

But getting into the new European market as a manufacturer isn't easy. Europe is prosperous and thriving. There is no ground floor to get in on. Europe wants American capital and know-how, but integrating an American firm's operation and products to European business takes time and serious study.

Stop-Gap Measures—Two stop-gap measures can pave the way for European manufacturing:

Licensing is comparatively simple and already a well-established technique, although licensing agreements are complex and varied. It is, however, less profitable than manufacturing, offers less opportunity for full market exploitation, and may not, according to U. S. court decisions, protect the U. S. manufacturer against lower-cost imports from his licensee.

Contract manufacturing through a foreign-based sales subsidiary can be used to meet particular temporary situations.

Decision Factors—Once a company has decided to manufacture in Europe, a location must be de-

cided upon. These questions should be weighed:

Is the government stable? What is the political climate?

What treaties of friendship, commerce, and navigation does the country have? Does it participate in customs unions and treaties including reciprocal trade agreements, tax conventions, etc?

What regulations govern business? What are the legal anti-monopoly, price discrimination and restraint of trade provisions? How will U. S. anti-trust laws affect operations?

Are there any restrictions on ownership, control, residence and nationality of stockholders?

What laws govern business associations? What are the legal and tax differences among corporations, partnerships or branches? Do laws vary for operations in which local capital participates?

What are exchange regulations regarding repatriation of capital, dividends, royalties and capital goods shipped into the country?

What about the supply of engineers, management, skilled and unskilled labor?

What is the minimum wage and range of prevailing wages and salaries? How much do social and fringe benefits cost?

Management Problems—Before building a European plant, an American manufacturer must somehow find the management to get things started and run the plant. Where a number of people experienced in manufacturing are available, building may prove more desirable than buying.

Major difficulty in buying a company is that in today's prosperous Europe, no one wants to sell. Finding an available company with op-

erations similar to the American buyer's may have to take precedence over many other considerations.

Financial Problems—Acquisition of foreign facilities is made doubly difficult by lack of corporate figures that can be measured by American standards. Financial statements are drawn up to get lowest cost compliance with complex tax laws and not to inform stockholders. They confuse rather than inform.

Asset values should be individually analyzed for purposes of acquisition negotiations. Estimating company worth by the American method of reckoning value at so many times earnings can start negotiations on a reasonable basis.

Holding Companies — Many U. S. companies now operate overseas plants through overseas holding companies. This permits deferral of U. S. taxes on money earned abroad. If plant and holding company are not in the same country, agreements governing double taxation by the two countries should be investigated.

For a holding company to make economic sense, agreements on double taxation should be at least as lenient as the double taxation that would result if the manufacturing operation were directly held.

Insurance Tips—Low cost insurance of overseas investments against inconvertibility of currency, expropriation, confiscation and, to a lesser extent, war losses, through the U. S. International Cooperation Administration is considered a good investment.

European companies are often family controlled. Mobility, geographic and social, is restricted. This makes it difficult to find competent managers. A company that inherits a competent manager is lucky.

If you can't hire a manager acquainted with both the American corporation and the foreign country, operations should be run by an American executive familiar

with corporate objectives and methods until a local man can be trained.

Rundown by Country—Keep in mind that European countries vary in what they offer. Here's a brief rundown.

United Kingdom—Manufacturers have a large domestic market and ready access to the huge Commonwealth market and the oil producing countries of the Middle East. Although extent of its participation in the continental unified market has yet to be determined, the UK must do something or lose its position as financial center.

Italy—One of the few West European countries with a labor surplus, it has low wage rates, increasing productivity. Industrial production was up 75 pct in 1956 over 1950 with only a six pct rise in employment. But it lacks skilled labor in the South and experienced and efficient management in depth.

France—Its greatest assets are a large domestic market and continued prosperity despite political troubles and the Algerian crisis. It also has the highest wage rates, largely due to fringe benefits and fairly high taxes. Results of de Gaulle's latest measures remain to be seen.

Belgium—Also enthusiastic about U. S. investments, it has higher wages than the Netherlands, more skilled labor and a larger number of competent managers.

West Germany—Shortage of labor and management and high building costs are characteristic. Greatest assets are a huge domestic market and an industrial complex that makes it easier to do business there.

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Rockwell Goes Abroad

The need to get a manufacturing foothold in Europe became evident to Rockwell several years ago.

This is a step-by-step report of how and why the company set up European operations.

■ A diverse, decentralized corporation in the U. S., Rockwell Manufacturing Co. has sold its products abroad through export agencies, foreign dealers, licensing arrangements, and, in Canada, four manufacturing subsidiaries.

With the advent of the unified European market, the company didn't renew a German licensing agreement which expired in 1955.

Instead, it set up a German sales company which imported from the parent corporation and contracted work to local manufacturers.

While engaged in this interim operation, the company looked for manufacturing facilities. A shortage of labor in Germany dictated against building a plant from scratch.

The operation closest to Rockwell's business (meters, valves, power tools) that could be found was a manufacturer of small gasoline and diesel engines, Ilo Werke, GmbH, at Pinneburg, near Hamburg.

It offered Rockwell:

An adequate supply of skilled labor and suppliers, which are difficult to find.

A highly competent engineering and research staff with first class facilities.

Sufficient land for expansion.

Trained administrative and selling staff.

Close access to a seaport for export trade.

Weighing these advantages of

a going organization against the fact that Rockwell management had no experience in Ilo Werke's product line, Rockwell bought.

By buying an existing company, the corporation saved the time and effort of setting up administrative staff.

In less than a year after purchase of the plant, it was shipping German-made Rockwell valves throughout the world. A full line of valves will shortly be available at "European" prices. Next step is production facilities for Delta power tools and Edward valves.

Ilo Werke has also improved its original marketing base. It has developed multi-unit gasoline engines that can be used interchangeably for various applications simply by adding or dropping cylinders, a hydraulic drive for engines, and a new "hydrodynamic" transmission applicable to Europe's small cars.

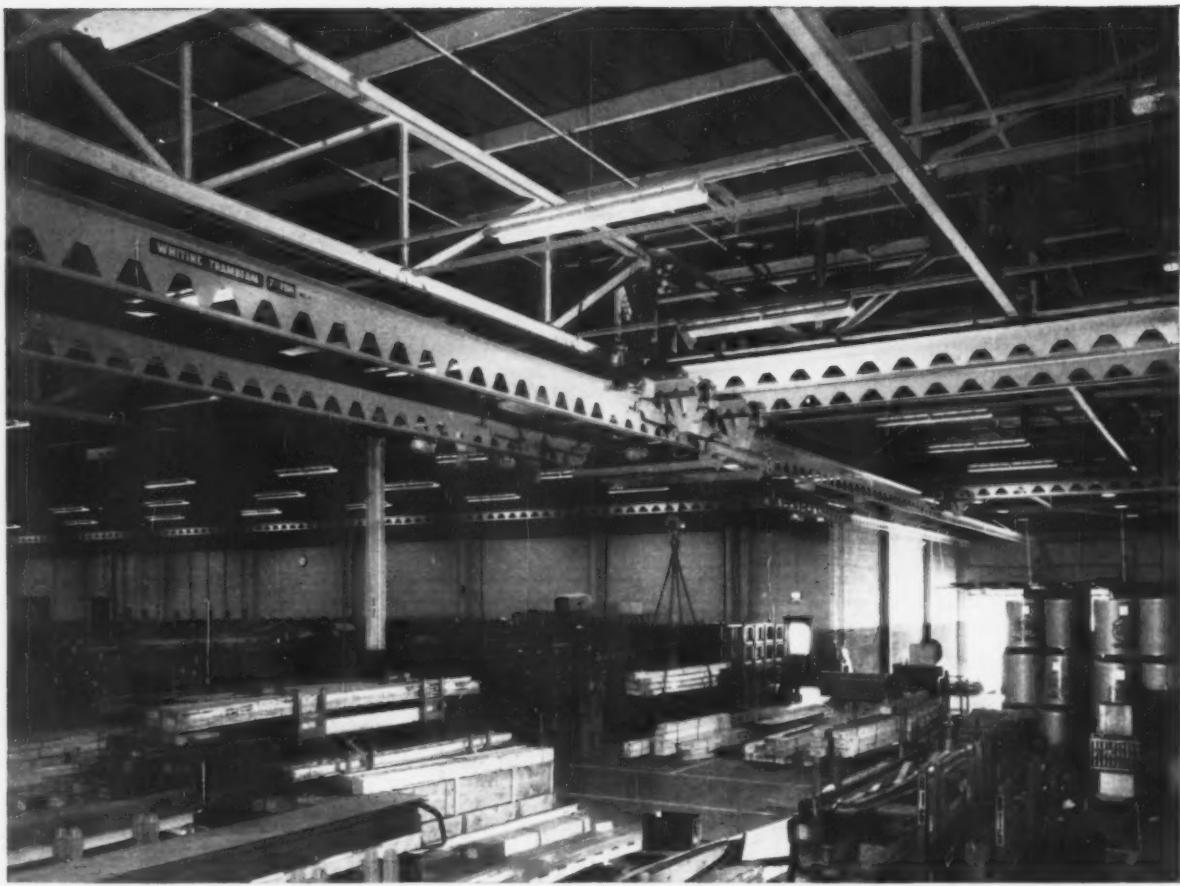
The company has expanded sales into the U. S. by arranging distribution through Hercules Motors Corp.

In preparation for manufacture of Rockwell-Delta power tools for the German and export markets at Ilo Werke, Rockwell shifted its U. S. power tool exports from an agency to direct distribution through dealers.

Although power tools are not known and used in world markets as extensively as in the U. S., Rockwell expects them to become a big export line.

Rockwell has also recently formed a sales subsidiary in Switzerland to coordinate all foreign business.

Currently doing less than 10 pct of total business abroad, Rockwell believes that it is not inconceivable that in a few years 25 pct of total sales will be made outside North America.



How overhead handling saves space

Automatic Electric, winner of an award for one of 1957's best ten new plants, uses Whiting Trambeam Overhead Materials Handling Systems. A Trambeam Crane System moves finished products from packaging and crating area to temporary storage in the shipping room. Result: aisle space is minimized — total cubic space is more effectively utilized.

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Economy Car Sales Picking Up

Six Cylinder Models Show Gains Over Eights

Fewer consumers were lured by the roar of powerful engines in 1958, sales figures show.

Economy is gaining ground on prestige. But will it stick?—By H. R. Neal.

■ Are new-car auto buyers becoming more economy-minded and cost-conscious in their purchases? There were some indications during 1958 that a greater percentage of customers were willing to take just a little less floss in their new car than during the previous year.

Ward's Automotive Reports, industry statistical publication, has come up with figures that would

seem to indicate a greater percentage of new car buyers in the lower price range, were willing to take just a little less of the so-called "extras."

Three Out of Four—Ward's noted that during the past model year six-cylinder engines accounted for a larger share of output by Ford, Chevrolet and American Motors than during the previous year. Only Plymouth seemed to go counter to the trend.

Chevrolet, traditional volume leader in sixes, produced 37.6 pct of its 58's with the "economy engine," up slightly from the previous year's 36.5 pct. Ford output jumped sharply during the same period to 23.9 pct from 13.1 pct.

AMC Analysis—American Motors showed an even sharper rise. Sixes accounted for 84.8 pct of Rambler production in 1958, compared with the company's 69.0 pct showing the year before. However, in 1958 AMC reintroduced its American on which only the six is available, and in 1957 the firm still produced Nash and Hudson automobiles which were powered predominantly by V-8 engines.

Plymouth produced the smallest portion of its cars with six cylinder engines of any of the four with 23.1 pct. However, unlike the others this was a smaller percentage than 1957's figure of 24.6 pct.

Automatic Gearshift—Although

Can Detroit Sell 6 Million in '59?

■ Creeping optimism is showing through conservative year-end statements by automakers. Industry leaders who raised their sights a cautious million or so units to 5.5 million cars to be sold in 1959, are beginning to change their tune. As the New Year began, their forecasts had the familiar ring of other years. Estimates for 1959 are inching upward.

Says Ford economist G. P. Hitchings: "The sales rate in late November and early December had already recovered most of the ground lost in the 1958 recession." He looks for sales returning "close to the 1957 level of six million, including imports."

Positive Signs—Chrysler President L. L. Colbert sees 5.5 million

new car sales but agrees it could go to six million—including about 400,000 imported cars—with the right combination of market factors.

Some plus factors: The new models have been well-received by the public. Hundreds of thousands of prospective buyers deferred purchases last year. Many consumers are in an excellent financial position. Prospects of national economic recovery are restoring confidence among consumers and businessmen.

Romney's Opinion—American Motors president George Romney calls 1958 the year of "the third great revolution in product concept in the history of the automobile industry—the trend away from longer, wider, and more

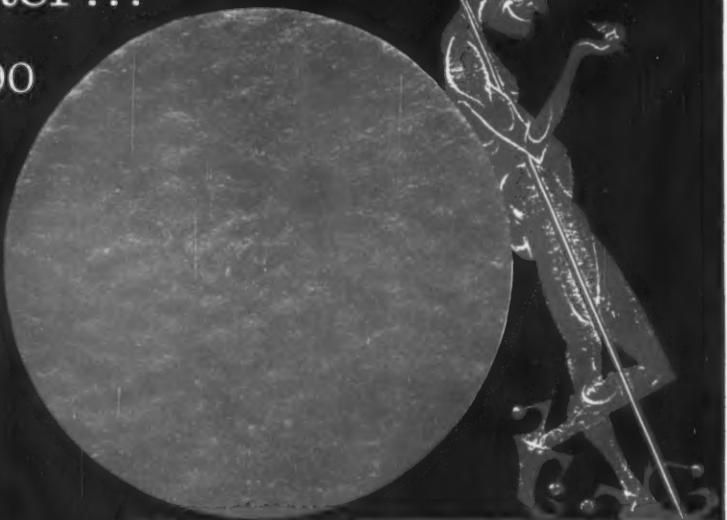
powerful cars." The other revolutions, according to Mr. Romney, were Henry Ford's Model T and GM's competitive emphasis on size and luxury.

AMC's president believes total sales will reach six million, barring crippling strikes, excessive monetary and credit controls, or adverse international developments.

Watchful Waiting—GM officials haven't officially deviated from their more conservative estimate of 5.5 million units announced earlier. And company spokesmen say they prefer to wait "until more 10-day sales figures are available." But many GM men find it difficult to disguise their increased optimism stemming from the figures they have on hand.

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Automotive Production

WEEK ENDING	CARS	TRUCKS
Jan. 3, 1958	97,819	13,955
Dec. 27, 1958	106,188	15,212
Dec. 20, 1958	135,964	23,405
Dec. 28, 1957	79,945	12,937
Dec. 21, 1957	140,447	13,955
TOTAL 1958	4,241,227	869,268
TOTAL 1957	6,115,458	1,085,932

*Preliminary

Source: Ward's Reports

there was a change in attitudes toward the higher horsepower V-8 engines, there was little change in the percentage of buyers willing to do their own shifting. The most noticeable change was at AMC, and probably for the same reasons as the decline in V-8s, only 49.3 pct of its cars were produced with automatic transmissions. In 1957 60 pct of its cars were shiftless.

More Chevy buyers, 68.7 pct of model year production, took automatic transmissions than the previous year when 66 pct bought them. But Ford production dropped slightly to 69.1 pct from 71.4 pct. Plymouth's figures for the two years were identical at 78.6 pct.

Overdrive Unchanged—The percentage of cars equipped with overdrive was little changed during last year. Only AMC showed an appreciable increase to 21.1 pct of production from 18 pct in 1957. The year's added emphasis on economy, apparently, paid off only where economy was stressed—and AMC pushed the theme harder.

Fewer buyers took factory installed radios, although many are usually installed by the dealer. Ford equipped 61.5 pct of 1958 cars with radios, compared with 68.6 pct the previous year. Plymouth dropped to 44.9 pct from 47.9 pct, Chevrolet 36.5 pct from 50.5 pct, and Rambler 36.1 pct from 45 pct.

Power Steering Trend—But on the other hand, a few more buyers wanted power steering, according to the Ward's figures. Ford installations rose slightly to 27.5 pct from 27 pct, Plymouth went up to 33.9 pct from 17.7 pct, and Chevrolet installations climbed to 24.1

pct from 15.6 pct. Only AMC installations dropped to 17.1 pct from 23.0 pct in 1957.

Whether the conservatism shown by car buyers in 1958 established a trend is difficult to say. But it did give six cylinder engines a new lease on life. One more car, Edsel, is offering the six in 1959 for the first time.

GM Beefs Up Its Diesel Line

Diesel engine manufacturers can expect a double dose of competition this year from the Detroit Diesel Engine Div. of General Motors.

In the planning and development state for the past three years, an expanded line is being introduced this month which more than doubles the number of units and range of horsepower previously offered.

All-Purpose Line—Eight new basic units and two new multiple units boost the number of diesel engines now offered to 13 basic

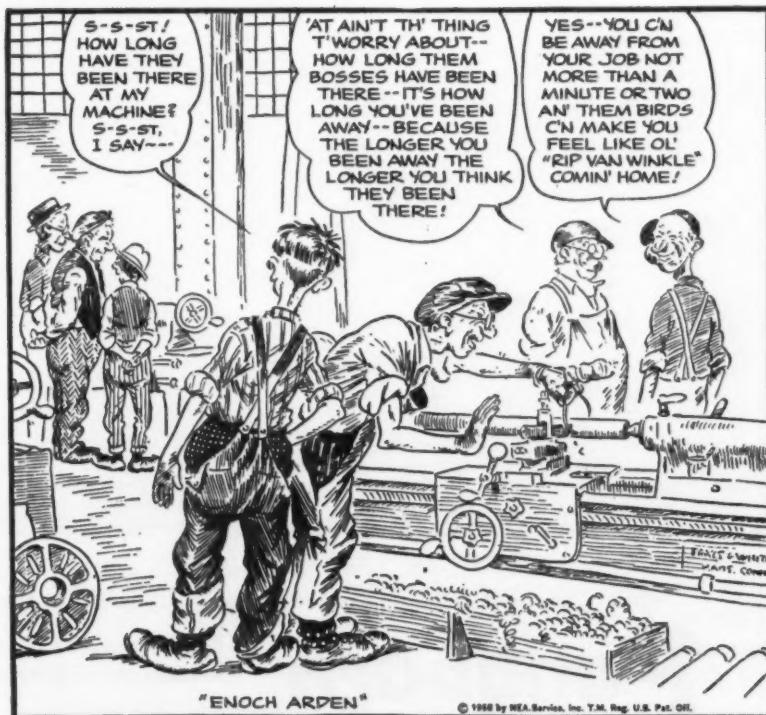
engines and six multiple units. Formerly covering the 30 to 893 hp range, GM's diesel line has been broadened into an "all-purpose" power line offering single, multiple and turbo-powered engines ranging from 20 to 1650 hp.

A new "53" series includes inline engines of two, three and four cylinder units. They range from 20 hp to a maximum of 130 hp. Also in this new line is a V6 engine with a maximum of 195 hp. The "53" indicates cubic inch displacement per cylinder.

Parts Interchangeable—The key series are the "53" and "71." These series have a high degree of parts interchangeability. In the entire line, for example, there are only three cylinder sizes. Pistons, rings, valves, valve operating mechanisms, injectors and many other parts are interchangeable, engine for engine, with each series.

As the smaller "53" engines are basically scaled-down versions of the "71" units, their operation and maintenance present "no problems" to mechanics familiar with previous engines in the line.

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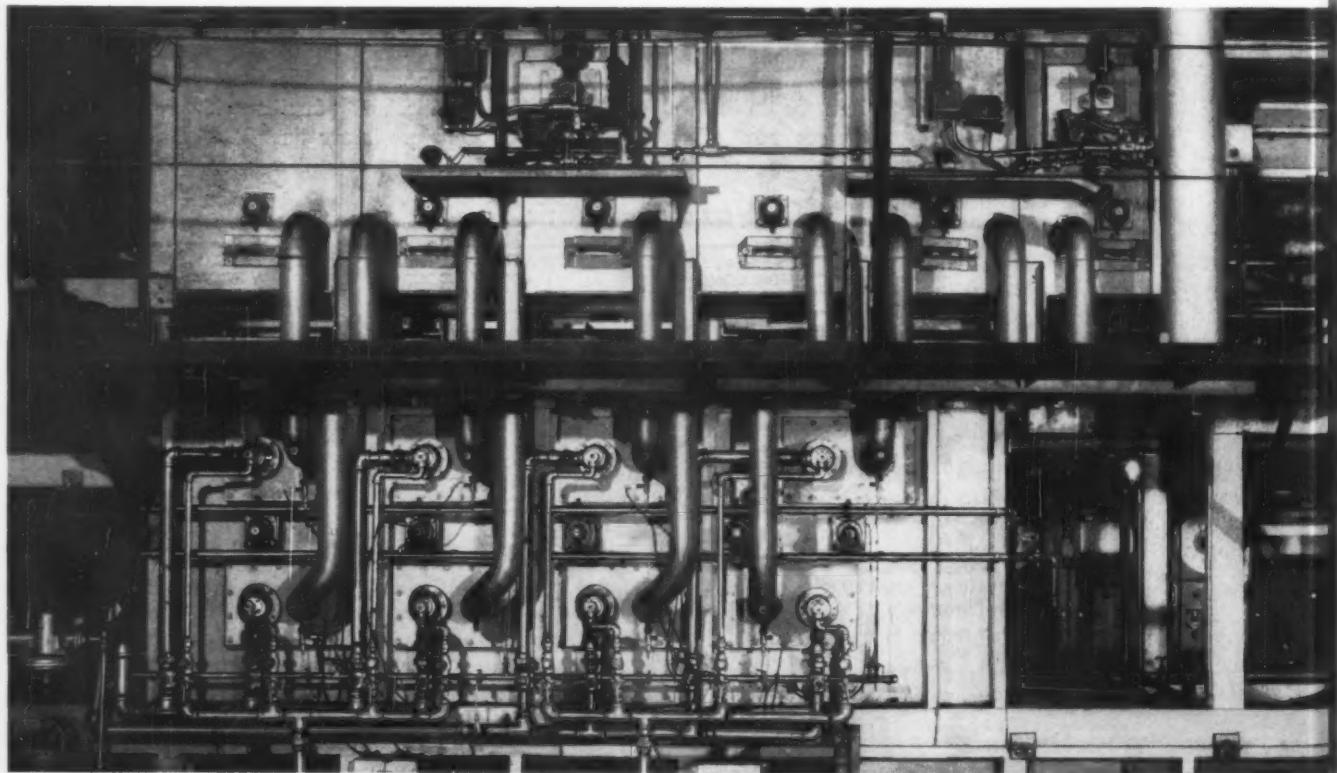
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The Issues Before Congress

Here's What You Can Expect This Session

On the surface there's fellowship between new members of Congress.

But this will disappear fast. The Democrats now have the power to do just about as they please.—By G. H. Baker.

■ There's plenty of camaraderie in Washington right now among the incoming members of the new Congress.

Good fellowship between the two parties is strong—on the surface. But it won't last long. Already, there are signs of heat and friction, much more than usual.

Power—Democrats have strong margins in both the Senate (64-24), and the House (283-153). With this hefty edge there is less need for cooperating and bargaining than in the previous Congress, where the margin was narrow.

In the new Congress Democrats have the votes to get about any kind of law they wish. Only possible restraint: Not enough votes to override a White House veto.

On principal issues, here's what to expect:

New Depreciation Study—Depreciation laws will be examined closely by the taxwriting House Ways and Means Committee. Complete job will occupy many weeks. But it's doubtful if any realistic new depreciation laws will be voted this year.

Best bet: Through your trade association, present your case for more realistic depreciation laws to the Ways and Means Committee of the House in the strongest possible terms. The committee's timetable calls for submitting its recom-

dations later this year, getting a new law enacted in 1960, to become effective in 1961.

Spending Up—Government spending is to rise, despite the lower amounts proposed by President Eisenhower. Ike recommends total federal spending of \$77 billion, trying to put the free-spenders on the spot. But congressional leaders believe he's barking up the wrong tree. They see in the November 1958, elections a "mandate" from the voters to spend more, not less.

Tax Picture—Social security deductions went up on Jan. 1 from $2\frac{1}{4}$ to $2\frac{1}{2}$ pct. Insurance companies will pay higher taxes. There's talk of cutting the $27\frac{1}{2}$ pct depletion rate for oil and gas and other extractive industries, but congressional leaders are cool toward this plan.

Proposals for higher postal rates and for higher gasoline taxes are

finding a chilly reception on both sides of the political aisle. Certain taxes scheduled for automatic cuts on June 30—such as on corporate income, autos, liquor, and tobacco—are likely to be continued at the existing rates.

Defense Spending Up Again—President Eisenhower tells Congress \$41 billion will buy all the defense the nation needs in the new fiscal year. This is equal to military expenditures in this fiscal year. But Democrats in Congress don't agree.

They claim it's not enough, intend to add extra military programs to Ike's shopping list. Example: They'll vote some procurement of so-called conventional weapons (guns, tanks, other pre-atomic age weapons) for the purpose of keeping some factories operating.

Ike argues continuing indefinitely to buy conventional weapons is neither honest to the taxpayers nor necessary militarily.

The Question Is "How Mild"

Bet on Labor Bill—There's a better than even chance that some kind of labor reform bill will make it this year.

Best bet: Something along the lines of the mild Kennedy-Ives bill that flopped in the last Congress.

Labor's Part—It's an open secret in Washington that labor lobbyists wrote most of this bill. Senator Kennedy has asked his union friends to do about the same thing this session.

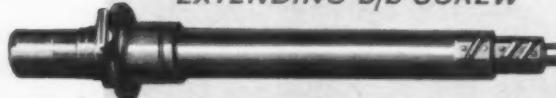
The old Southern Democrat-Republican coalition has largely dis-

appeared, improving chances of passage now. One problem: Sen. Ives (R., N.Y.), did not choose to run for re-election, so Sen. Kennedy (D., Mass.), is seeking a new co-sponsor.

Enough—A possible hint of things to come: Sen. McNamara (D., Mich.), has become quite vocal in urging the approval of a mild labor reform bill. Sen. McNamara is also trying to kill off the Senate investigation of labor racketeering. He says it has "outlived its usefulness."

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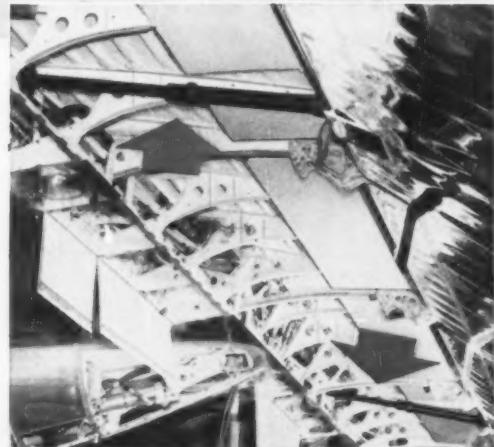
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How Much Will Coast Steel Gain?

Sales Boost of 25 Pct Above 1958 Possible

Steel shipments in eleven-state Western area could top 6.5 million tons in '59.

Here's a forecast on how steel-using industries there will do.—By R. R. Kay.

■ Steel sales in the 11 Farwestern states this year may be 25 pct above 1958 levels. This would put shipments close to 1957 tonnages—a near-banner year for the industry.

Reasons Why — These forecasts are based on a survey just made by a major steel company. Here are the reasons why a 6.5 million-ton-year or better is predicted for West Coast steel:

Inventories are at rock bottom. About 40 to 50 pct of the increased shipments will go to build them up.

There's fear of price hikes and a steel strike.

Western business leaders are optimistic. They forecast a moderate

and steady pickup rather than a galloping one.

California Gains — Almost all reliable business indicators point to continuing recovery. Example: California has two-thirds of the manufacturing employment in the 11 Western States. Since April 1958, the low point in the recession, manufacturing manhours rose 13 pct. And the trend keeps up.

Industry Rundown — How will the various industries fare this year? Here's a quick rundown:

Construction: Up—with builders hardware, plumbing, heating, and air-conditioning doing very well. Some large pipeline projects will be getting under way.

Containers: Did well in 1958. And should do better this year. Tinplate for canmaking is extremely important to the western steel market. About one-quarter of the nation's tonnage for cans is con-

sumed on the West Coast.

Railroads: There aren't too many signs of life. Whatever this industry does, it will look good in comparison with 1958.

Automotive: Auto assembly is now 25 pct higher than last year's low. The region will make 10 pct of the national output.

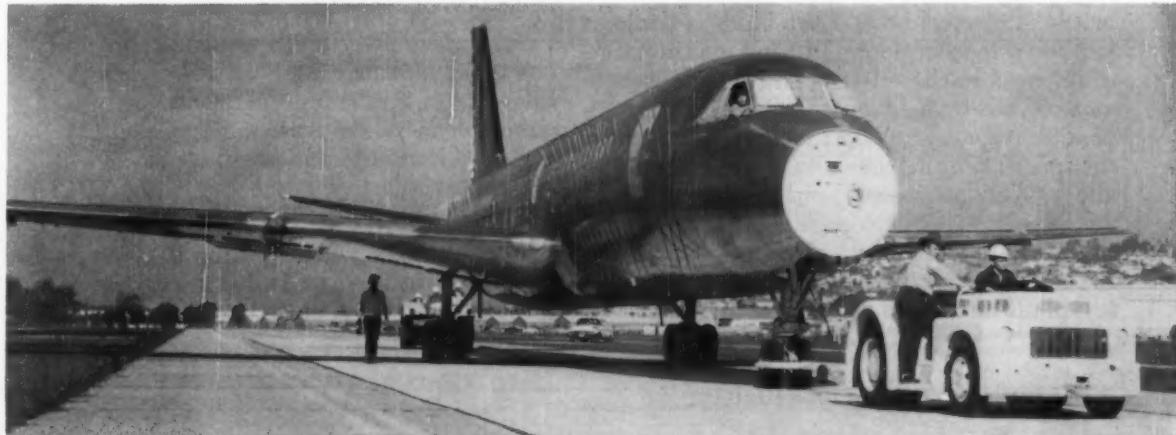
Shipbuilding: It's picking up and should get stronger as the year goes on.

Aircraft: Not much change. About the same amount of steel will be used in 1959.

Missile handling equipment: Business in this category should offset any losses in the phasing-out of manned aircraft.

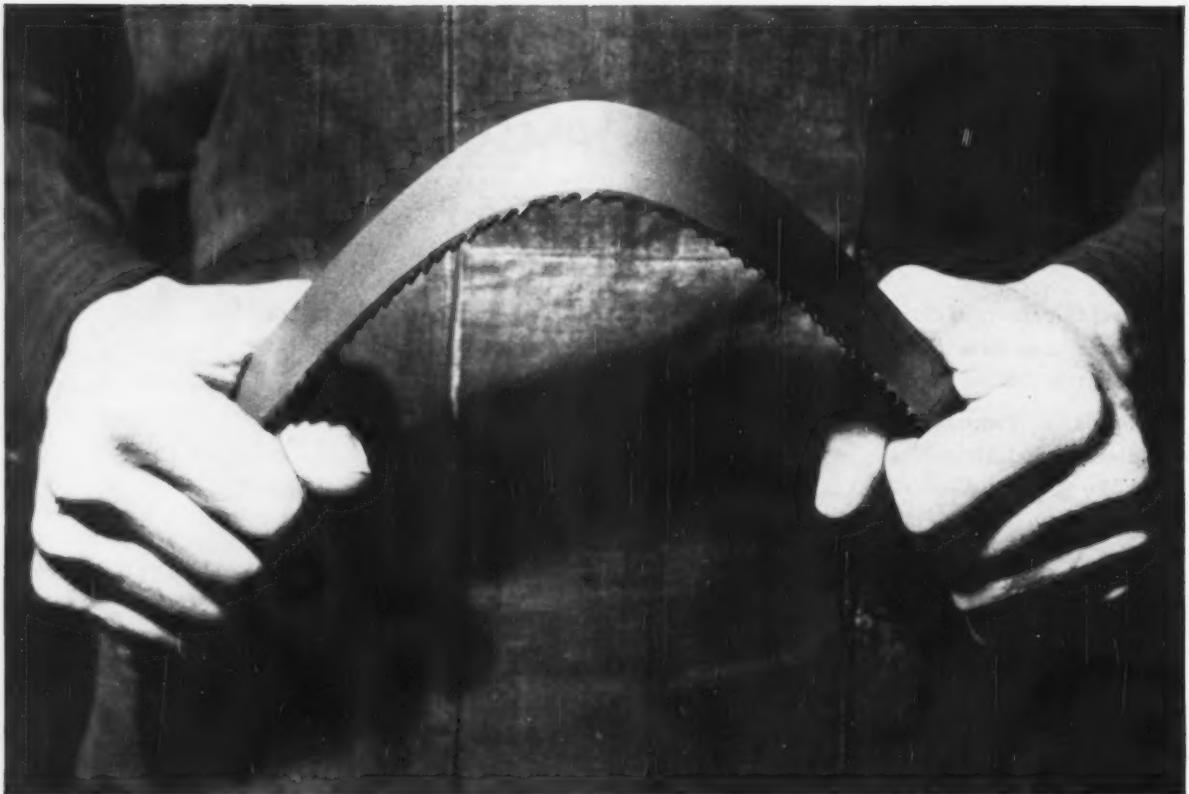
Missile launching sites: This branch falls into the construction industry. But it's becoming a factor in steel sales. It will do very well this year.

Convair 880 Ready for Structural Testing



TENSION PADDED: Completed Convair 880 jetliner, second off the assembly line, is readied for flight

testing. For nine-month program of "flying in place," it's supplied with tension pads.



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formance has been unequalled by any of the imitators.

The MARVEL high-speed-edge hack saw blade can be tensioned from 200% to 300% tauter than any ordinary hack saw blade, a definite advantage which permits heavier feed pressures to be used without deflection or fear of breakage.

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Tool Builders Recover Slowly

Rising Hopes Were Dashed Last November

The statistics tell the sad story.

Both new orders and shipments took a nose dive.

British builders also have problems, but Chinese orders help.—By E. J. Egan, Jr.

■ Machine tool builders still trail most other U. S. manufacturers in shaking off the recession.

Builders' hopes for recovery rose last October. The net new order total for that month for both metal cutting and forming machines hit a high for the year.

False Alarm—But the November figures torpedoed the uptrend before it was a month old. Here they are, matched against net new orders for the previous month, and for November, 1957:

Metal Cutting Machine Tools	
November 1958	\$20.7 million
October 1958	\$28.5 million
November 1957	\$28.4 million

Metal Forming Machine Tools	
November 1958	\$8.5 million
October 1958	\$8.6 million
November 1957	\$6.8 million

The industry's shipment figures really point up the rough time builders are having. In the first 11 months of last year, they scrounged out \$476 million worth of shipments of all types of tools. Contrast that total with the shade better than \$1 billion they delivered in the like 1957 period and it's plain to see why they're hurting.

Room for Improvement

Maybe better prepared machine tool proposals will help the sale

of U. S.-built equipment. The American Machine Tool Distributors' Assn. thinks so, is offering contest awards to its member firms for the best examples submitted before February 23.

Winning entries will be displayed at the Assn.'s March Meeting in Washington, D. C. Copies will be widely distributed throughout the industry, AMTDA officials say.

British Tool Troubles

British machine tool builders have also been pinched for business. But recent orders from Red

China gave two of them, at least, quite a lift.

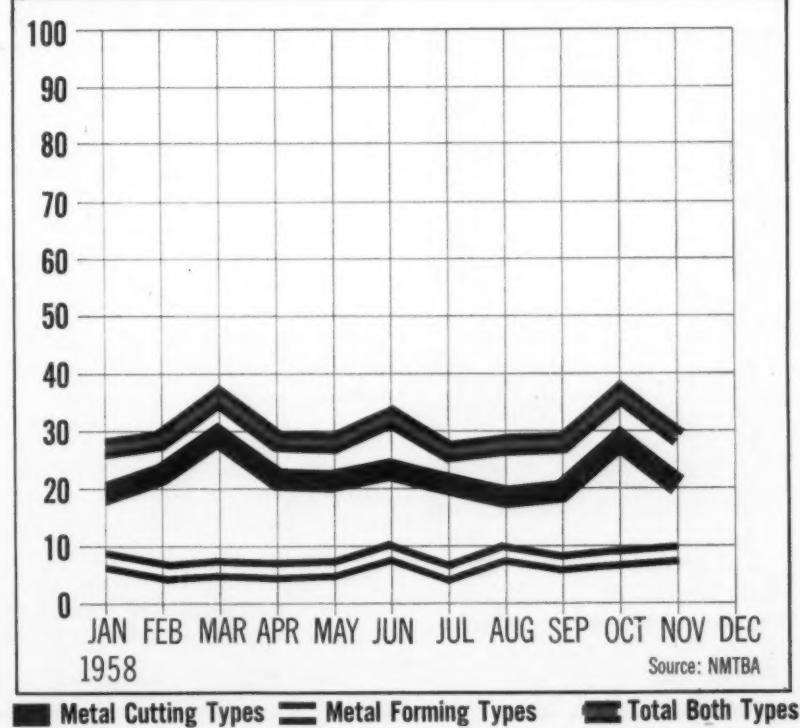
China National Machinery Import Corp. bought tools worth over \$1.6 million from Britain's Asquith Machine Tool Corp., Ltd., for delivery this year. The lot is said to include some really giant-size horizontal milling and boring machines.

The Reds also ordered \$1.4 million worth of turbine gear hobbing machines, measuring instruments and gear cutting tools from David Brown Machine Tools, Ltd. Deliveries are to start in November this year.

MACHINE TOOLS-NET NEW ORDERS

In Millions of Dollars

Metal Cutting and Forming Types



INDUSTRIAL BRIEFS

Gather at Hicksville — Servo Corp. of America, New Hyde Park, N. Y., manufacturer of infra-red and automation systems, will build a \$1.5 million plant in Hicksville, Long Island, N. Y. The facility will consolidate the research and development, manufacturing and administrative activities of the firm's six present plants.

Foiled — The Pittsburgh Engineering & Machine Div., Pittsburgh Steel Foundry Corp., will manufacture two 64-in. four-high aluminum foil mills for Cochran Foil, subsidiary of Anaconda Aluminum Co. This order represents a \$2 million expansion program to increase production of aluminum foil at the Cochran plant in Louisville, Ky.

Buyer's Guide — The Committee of Stainless Steel Producers, American Iron and Steel Institute, has published a new manual entitled: "Buyers' Guide for Stainless Steel Products and Services." The 159-page book lists about 3,000 firms which make products and offer services pertaining to stainless steel.



APPOINTED: James H. Sands, executive vice president, Eclipse Fuel Engineering Co., Rockford, Ill., was named advisor to director of Metalworking Equipment Div., Business and Defense Services Administration.

German Fellows — The Fellows Gear Shaper Co., Springfield, Vt., has arranged to manufacture and market the entire line of gear hobbing machines and worm milling machines made by Herman Pfauter Hobbing Machine Works, Ludwigsburg, Germany.

Joins — U. S. Steel Supply Div. of U. S. Steel Corp., Chicago, is the newest member-company of The Material Handling Institute, Inc. MHI now has 91 member-companies which manufacture industrial material handling equipment, accessories, and other related services.

Togetherness — Allegheny Ludlum Steel Corp., will bring together corporation personnel now located in buildings in downtown Pittsburgh and in Brackenridge at its national headquarters in the Oliver Bldg., Pittsburgh. The steel company has signed a 10-year lease beginning May 1, 1960.

Head Handlers — The Material Handling Institute, Inc., Pittsburgh, have elected a new slate of officers. Eugene Caldwell, general Manager, Baker Industrial Trucks, a division of Otis Elevator Co., is president. C. L. Fell, American MonoRail Co., is first vice president; R. F. Moody, Hyster Co.'s Domestic Industrial Truck Div., is second vice president.

Way Out There — Lockheed Aircraft Corp.'s California Div., Burbank Calif., has purchased a site near Saugus, Calif., for a multi-million dollar advanced scientific research center to explore problems of flight up to 10 times the speed of sound and at altitudes where man has never flown. The new facility will be known as Lockheed Research Center.

Pipe Plant — A new branch plant is being erected in Jackson, Miss., for the Power Piping & Sprinkler Div. of Blaw-Knox Co., Pittsburgh. The facility will expand the company's service in the design, fabrication, and installation of piping systems in the South and Southwest.

Morse Picked — Everett Morse, Jr., of the Simplex Wire & Cable

Co., Cambridge, Mass., has been named Advisor to the Director of the Copper Division, Business and Defense Services Administration, U. S. Dept. of Commerce.

New Extruder — Olin Mathieson Chemical Corp., and Textron, Inc., have formed a jointly owned company, Almetco, Inc., to produce aluminum extrusions. The new company will own and operate aluminum extrusion plants, formerly owned by Textron, Inc., at Girard, Ohio and Nesquehoning, Pa.

MARS — A \$2.9 million follow-on order has been awarded Lear, Inc., Grand Rapids, Mich., by the Air Materiel Command for the firm's Master Attitude Reference Systems (MARS). The systems are being ordered for B-52F aircraft.

Doubles in Brass — Consolidated Diesel Electric Corp., Stamford, Conn., announced its subsidiary, Hammond Valve Corp., has acquired the business and assets of Hammond Brass Works, Inc., Hammond, Ind. Terms of the transaction consisted of cash plus \$500,000 in notes to the sellers payable over a period of 5 years.

Coke Battery Starts Up — Inland Steel Co.'s coke producing capacity at its Indiana Harbor steel plant in E. Chicago, has increased 20 pct. The increase results from the output of a new 87-oven coke battery. Production rate of the battery is 1,200 tons per day, giving the plant a total daily coking capacity of 7,800 tons.

One Foot in Washington — H. C. Wilson, sales manager, aluminum products, Revere Copper & Brass Inc., has been appointed to the National Defense Executive Reserve unit of the Business and Defense Services Administration of the United States Dept. of Commerce.

Kafker Elected — Gerald L. Kafker, assistant district manager, Luria Brothers & Co., Boston, has been elected president of the Northern New England chapter of the Institute of Scrap Iron and Steel.

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4. Encouraging News for Heart Patients
5. What the New Congress Will Do to You and for You
6. Campaign for 1960 Starts -- with Both Parties Split
7. Providing for Your Family's Future: What Fathers Should Know
8. Next Big Tests for School Integration
9. Are Strikes Delaying the Business Upturn?
10. How to Protect Yourself Against Inflation
11. In Britain -- a Comeback for "Conservatives"
12. Nixon's New Role
13. Halting H-Bomb Tests: What's at Stake
14. Farewell to Passenger Trains?
15. War Dangers in the Middle East
16. New Federal Aids for Small Businesses
17. A Billion People in U.S.? The Coming Population Explosion
18. Is This a Good Year to Buy a House?
19. Jet Planes for the Airlines...Where & When You Can Fly
20. Analyzing Investments of Officials in Their Firms' Stock
21. 4 Billions for Roads -- Big Boost for Business in '59
22. How Ike Will Deal with Democratic Majorities in Congress
23. U.S. Space Program: First the Moon, Then Mars & Venus
24. When Public Schools Close: Report From 4 Southern Cities
25. All About Current Tax Rules on Expense Accounts
26. Double-Barreled Medical Advance for Arthritis Sufferers
27. "Hate Bombings": What's Being Done to Stop Them?
28. Who Gets the 6.2 Billions for Military Research?
29. Where the Big Investors Are Putting Their Money
30. Big Consumer Spending: Paving the Way for Recovery
31. Can Your Child Get a Federal Loan for a College Education?
32. Nasser-Khrushchev: "Partnership" That Spells Trouble
33. Timetable for Recovery, Industry by Industry
34. What U.S. Has Learned from Satellites in Space
35. How To Make 5% on Your Money
36. Your Food Bill in the Months Ahead
37. De Gaulle's Blueprint for a Stronger France
38. Is a National Sales Tax Coming?
39. 2 Million More Jobs: Effect on '59
40. New Trouble for the U.S. in Argentina
41. "United Front": Newest Way to Fight Strikes
42. Behind Red China's "Hate America" Drive
43. U.S. Schools -- Getting Tougher and Better
44. New Ways to Save on Business Taxes
45. What Opening of St. Lawrence Seaway Means
46. Soon from Detroit -- Smaller, Cheaper Cars
47. Profits: New Records in Prospect for 1959
48. New Ways to Get Protection from Insurance
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50. Full Report on Alaska
51. How to Handle Your Money Now
52. Credit Cards: What's Good and Bad About Them
53. Nasser's Next Move -- Closing the Ring Around Israel?
54. 5 Years of Integration...Report on Washington Schools

55. Political Hopefuls for the 1960 Presidential Race
56. Latest Rules for Calling Military Reservists
57. How Well Prepared for War Is the U.S.?
58. Khrushchev's Game in East Germany
59. The Big Increase in Federal Spending...Who's Responsible?
60. Stock Vs. Bond Yields: How They Now Compare
61. How Well Are the '59 Cars Selling?
62. Where to Get the Most for the Dollars You Spend
63. Polluted Air in Our Cities: A Cause of Cancer, Heart Disease?
64. If You're Planning to Borrow Money --
65. What Husbands & Wives Should Know About Family Finances
66. Today's War: How Reds Stir Trouble in 72 Countries
67. Best Job Opportunities for College Graduates

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MEN IN METALWORKING



M. P. Kartalia, elected vice president, Square D Co., Detroit.

Alfred Sherman, named consulting vice president, Monarch Machine Tool Co., Sidney, O.

A. H. Shonkwiler, appointed asst. vice president, Operations Div., Wheeling Steel Corp.; **Leslie Irvine**, appointed asst. vice president, Sales Div.

T. F. Scannell, appointed vice president - general sales manager, The Falk Corp., Milwaukee.

A. R. Zender, named chief executive and general manager, Bridgeport Brass Co., Bridgeport, Conn. He succeeds **H. W. Stein-kraus** who will continue as chairman.

H. N. Lang, appointed general manager, Steubenville Works, Wheeling Steel Corp.



T. W. Kuhn, elected president, Bohn Aluminum & Brass Corp., Detroit.

W. S. Cornell, named director, marine transport, Ormet Corp., Hannibal, O.

Wolverine Tube, Division of Calumet & Hecla, Inc., Detroit, announced new district sales managers. **R. B. Flynn**, Cleveland district; **C. T. Fuller**, Chicago; **Philip MacKay**, Philadelphia; **G. W. Overstreet**, Dallas; **T. F. Vigmostad**, St. Louis; **R. C. Cash**, Birmingham; **E. J. Campbell**, Detroit.

John Towers, Jr., appointed manager, Carteret, N. J., plant, U. S. Metals Refining Co., a subsidiary of American Metal Climax, Inc.

W. C. Fisher, appointed director, marketing and **J. D. Dougherty**, sales manager, Norge Div., Borg-Warner Corp., Chicago.

A. H. Woodward, appointed manager, Miami sales district, Kaiser Aluminum & Chemical Sales, Inc.

C. M. Dick, appointed product manager, electrodes, Metal & Thermite Corp., New York.

J. R. Anderson, appointed manager, Materials Handling Div., Heppenstall Co., New Brighton, Pa.



S. D. Den Uyl, elected chairman of the board, Bohn Aluminum & Brass Corp., Detroit.



R. H. Loutzenhiser, named division vice president, production, Stainless and Strip Div., Jones & Laughlin Steel Corp., Detroit.

L. J. Courtney Jr., named manager, sales service, Duff-Norton Co.'s Coffing Hoist Div., Danville, Ill.

J. A. Matthews, named asst. district sales manager, Republic Steel Corp.'s Birmingham, Ala. sales district.

A. L. Spratt, appointed director, research and engineering, Metal Forming Corporation Div., Elkhart, Ind., Vanadium-Alloys Steel Co., Latrobe, Pa.



G. D. Stutzman, appointed manager, Conversion Sales Dept., Latrobe Steel Co., Latrobe, Pa.

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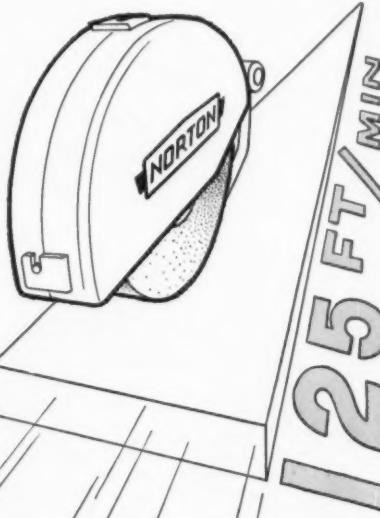
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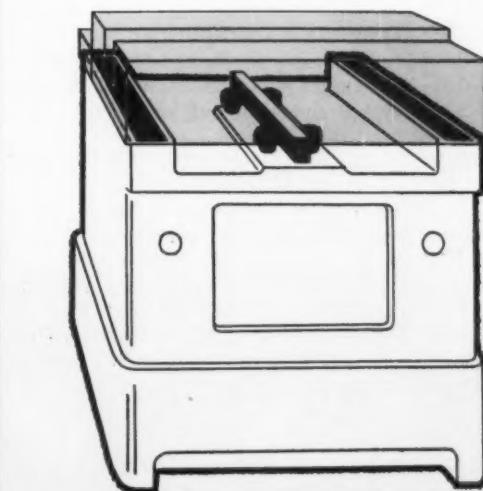
Finish flat faster, cut grinding time and increase production, with high table speed, 125 feet per minute.



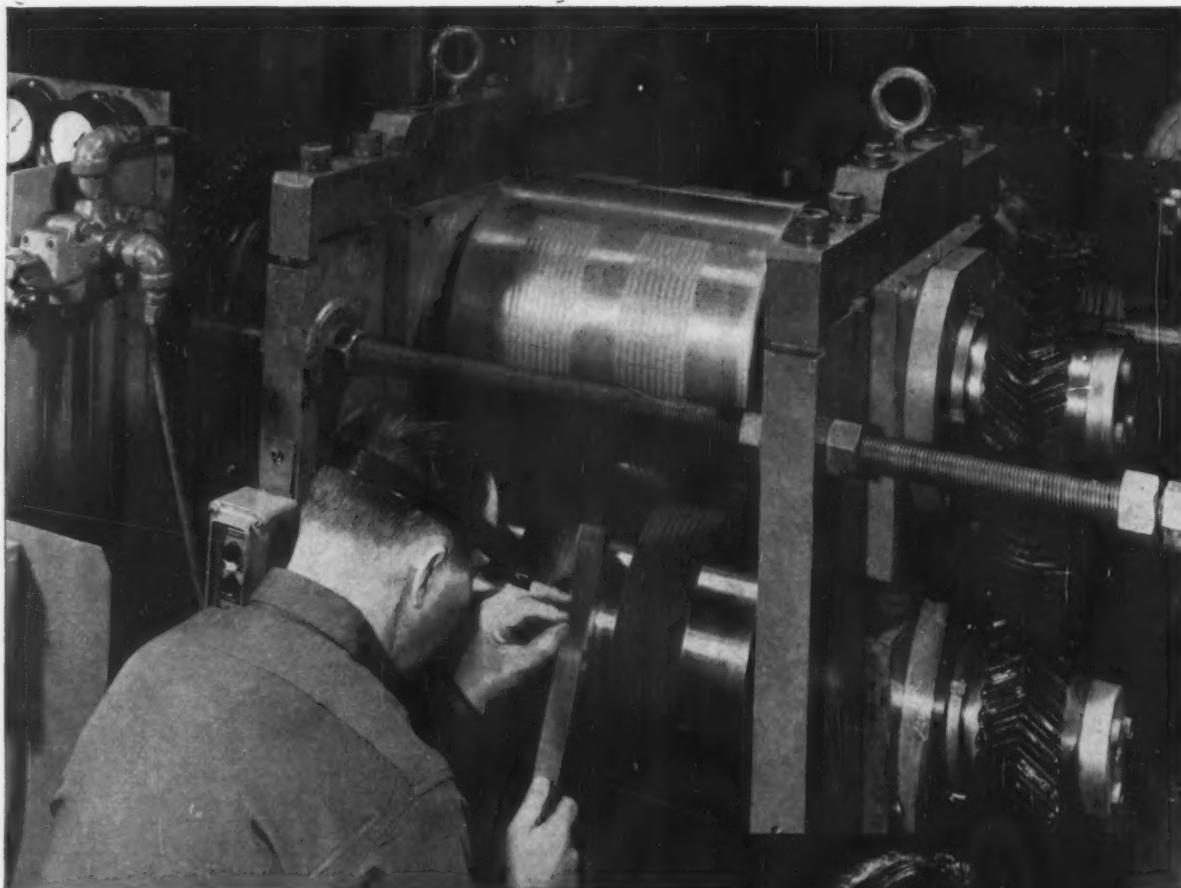
Heat goes off in the chips, due to new, high table speed. This cooler grinding permits faster production on heat-sensitive metals.



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Simple Pencil Drawings Guide Automatic Flame Cutter

By E. T. Jones, Plant Engineer, Dresser-Ideco Co., Columbus, O.

Here's a new idea for flame cutting steel shapes more accurately and at less cost.

To guide the cutting torch, an electronic tracer follows ordinary pencil lines on paper.

- The way you control torch motion is a key factor in the overall cost of flame cutting various shapes from steel plate. What's more, the accuracy and flexibility of a flame cutting machine can affect the cost of other fabricating work you do on these shapes.

Dresser-Ideco Co., Columbus, O., is well aware of these facts. The firm has long used flame shape-cutting machines to turn out parts for its major products: radio, radar and TV towers; industrial buildings; electrical substations. Until recently, the company guided cutting-torch motion either manually, or by the template-tracing technique.

Bought New Machine — Last August, however, the company installed a 10 x 20-ft shape-cutting machine with a new kind of electronic tracer control. The automatic machine, made by Chemetron Corp.'s National Cylinder Gas Div., doesn't use strip-steel templates. Instead, it controls torch motion by following an ordinary pencil-line drawing of the shape to be cut.

With its electronic line tracer, the firm cuts more accurate shapes in less time and at lower cost. For example, it takes about 75 pct less time to draw the outline of a shape than it does to make an equivalent strip template. The versatility of

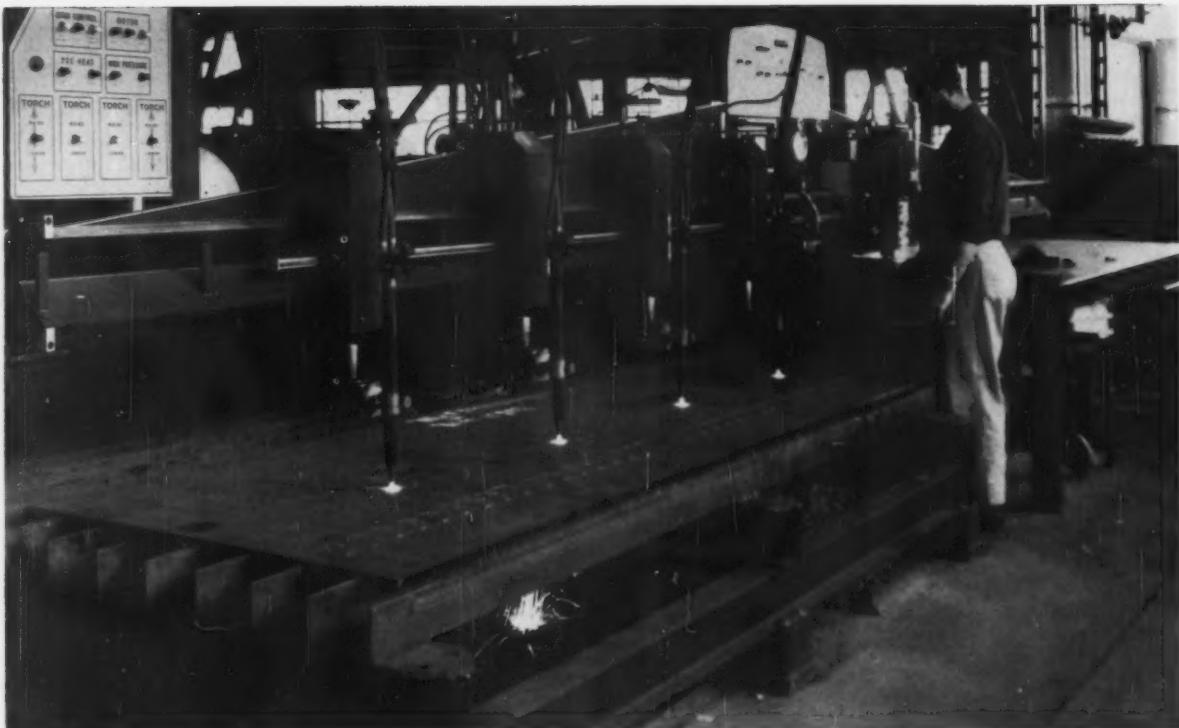
this technique also brings substantial cost reductions in other production operations.

Use Nears 100 Pct — Today, the company does about 85 pct of all its flame shape-cutting on the new ma-

chine, using standard commercial hot rolled plate. Plate thickness ranges from 10 gage to 6 in. Use of the line tracing method will approach 100 pct when a smaller, 6 x 12-ft machine is similarly



EASY PATTERN MAKING: Line drawing for flame-cut ring (lower right) takes only minutes. Strip template (lower left) takes two hours.



USE ONE DRAWING: One drawing per shape insures accuracy. One for this job guides four cutting torches.

equipped in the near future.

The tracer consists of an electronic scanning device, a drive unit, and a control panel. The optical scanning system follows the exact center of any drawn line 0.040 in. wide or less. Error of the tracing head is less than 0.005 in. on either side of the scanned line at speeds up to 25 ipm.

Stays On Path—The line tracer will continue on its proper path without being disturbed by an intersecting line, as long as the smaller angle between the lines exceeds 45°. The tracing head can execute turns at a minimum radius of 3/32 in.

To cut a shape by this method, Dresser-Ideco makes a full-size line drawing (with proper allowance for kerf width) directly from the blueprint. Guide lines drawn in blue pencil need not be erased, since the tracer scans only graphite pencil lines. The heavy drawing paper is relatively tough and can be used many times over for repetitive work.

When a drawing is ready for the machine, the operator tapes the

paper down on a thin metal sheet. He uses permanent magnets to fasten this sheet to the tracing table.

Guides Several Torches—The operator then draws an entry line into the tracing pattern and, with the tracer switched to manual control, guides the tracing head toward this line. As the tracing head meets the line, he switches to automatic control. The head then follows the entry line into the drawing. From one to four cutting torches may be controlled simultaneously, depending on the type of work.

The company finds that the new control technique brings savings in four areas: (1) lower pattern cost, (2) faster cutting of shapes, (3) lower production costs beyond shape cutting itself, and (4) less downtime for more actual hours of production per day.

In the pattern-cost area, for example, it takes a maximum of 15 minutes to prepare a line tracing of a typical flange plate. A strip template for the same part, although one of the simplest to make, takes about two hours of a man's time.

Paper Costs Less—Another saving worth noting in this area: paper for line tracings costs about 5¢ per sq ft, while the combination of steel plate and strip for a strip template costs about 33¢ per sq ft.

Moreover, the company now stores its line tracings in a small fraction of the 600 sq ft of floor space formerly assigned to strip-template storage.

Line-tracer control brings other major savings by reducing the lead time for shape cutting. Formerly, it was not unusual for the strip-template shop to be jammed with work at critical times. This meant that templates could not be made as fast as they were needed.

Setups Are Easy—Faster setups and shorter cutting cycles also reduce lead time for flame-cut pieces. Setups go faster because it is so easy to place or relocate a drawing on the tracing table. Also, since the cutting machine uses the electronic tracer continuously, there is no need to take time to exchange tracing heads.

Abutting shapes wherever possible so that one pass of the torch cuts two edges also speeds up repeat cutting of the same shape. In addition, this technique saves material.

The ability to make on-the-spot changes in shape at the cutting machine also saves a lot of time, particularly on rush orders. If the first few pieces on an order are out of tolerance, there is no problem of taking a metal template off the table and sending it back for correction. The machine operator simply erases the incorrect lines and redraws them.

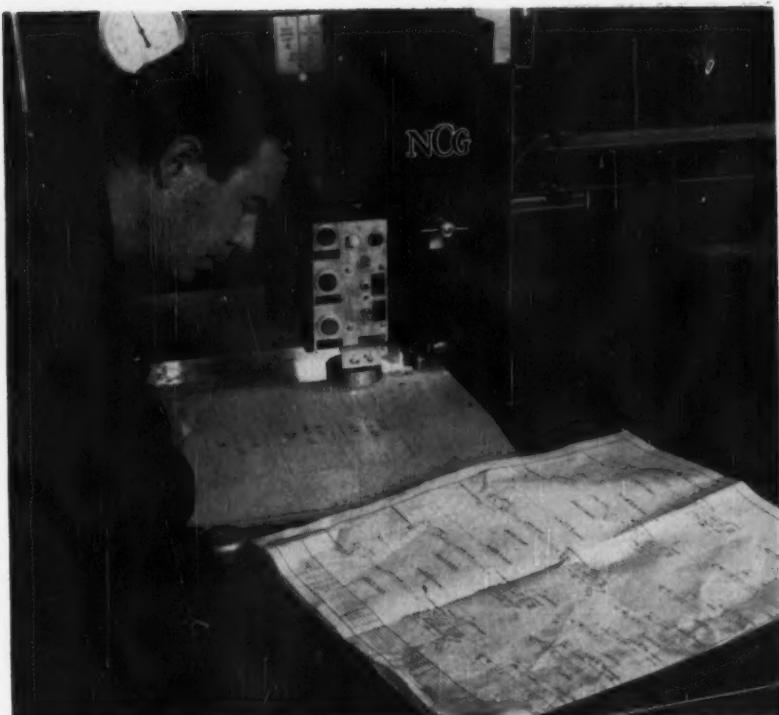
Saves Extra Work—In still another cost area, the accuracy of electronic line tracing eliminates additional machining on many components. Formerly, cuts which were manually traced often needed machining to insure proper fits.

The firm also saves time and materials in welding assemblies of parts cut by the new method. Manual guidance of the torch often produced parts that were slightly out of shape, so that gaps along the joints had to be filled with weld metal. Now, however, welders find they use less time and weld metal on these jobs.

Formerly, too, production pressure often required large numbers of parts to be flame cut by manual guidance. Understandably, machine operators grew tired of repeating the same operation. To avoid the loss of quality which tended to accompany this fatigue, the firm sheared the outside edges of many shapes. With the line tracer, this shearing step is no longer necessary.

In most cases, too, drawing hole locations on the tracing patterns eliminates the need for templates.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.



ALL AUTOMATIC: Operator checks part numbers on tracing drawing as the electronic scanner unit automatically follows an accurate pattern line.



CLOSE FITS: Line tracing insures accurate cuts, eliminates subsequent machining, saves time and materials in welding up final assemblies.

Cr-Ni Plate Guards Molybdenum

A two-layer electrodeposited coating will protect molybdenum from oxidation at elevated temperatures.

It could greatly extend the use of this ultra-high strength material.

At very high temperatures, molybdenum has greater structural strength than steel. But it also has a limitation that severely restricts its usefulness. At these temperatures, it oxidizes rapidly.

To protect against oxidation, the National Bureau of Standards has been looking into a composite electrodeposited plating of nickel over chromium. Preliminary results have been very promising. At 1796°F, the coating protects molybdenum from oxidation for

over 1000 hours. And even at 2012°F, it staves off oxidation for more than 300 hours.

Avoid Porosity—Developed for the Navy Bureau of Aeronautics, the chromium-nickel coating can satisfactorily meet two most crucial requirements. First, it affords excellent oxidation resistance. But just as important, it is non-porous and sufficiently ductile when properly applied. This is essential since even the slightest porosity may lead to oxidation of the molybdenum.

The plating procedure is relatively simple. First, the molybdenum is etched with a 1:1 solution of concentrated sulphuric and phosphoric acids. A 0.001-in. chromium deposit is plated on the basis metal at about 185°F and 120 amp/dm² (decimeters). This is followed by etching in 1:1 hydro-

chloric acid, a nickel strike, and a nickel plate 0.007 in. thick. The plate is deposited from a Watts type, rather than an all-chloride bath, at 2-5 amp/dm².

Good Adhesion—Several types of durability tests were run with coated samples. To test adhesion, completed specimens were bent until fractured. The break usually occurred within the molybdenum—not between the plated layers. This is proof of excellent adhesion and goes far in determining how effective protection will be.

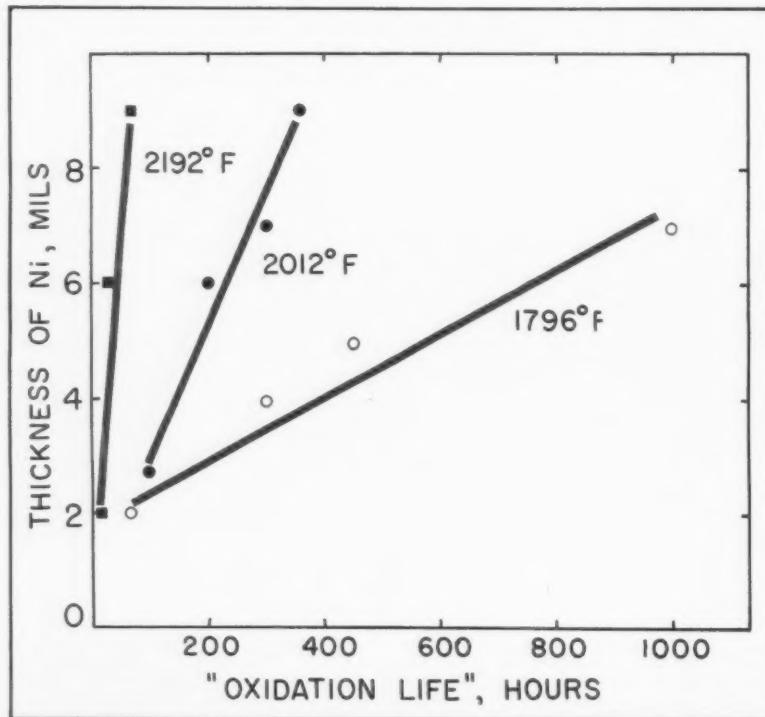
Coated specimens were exposed to air at 2012°F until the coatings were perforated or until a white smoke of molybdc oxide appeared. At this temperature, the coating withstood oxidation for an average of 300 hours. At 2192°F, oxidation was greatly accelerated. Pre-heating samples in an inert atmosphere shortened the oxidation life of the coatings.

Three underlying causes of failure were noted in coated specimens subjected to different periods of air oxidation at 2012°F. These were subsurface oxidation, grain-boundary oxidation, and edge separation.

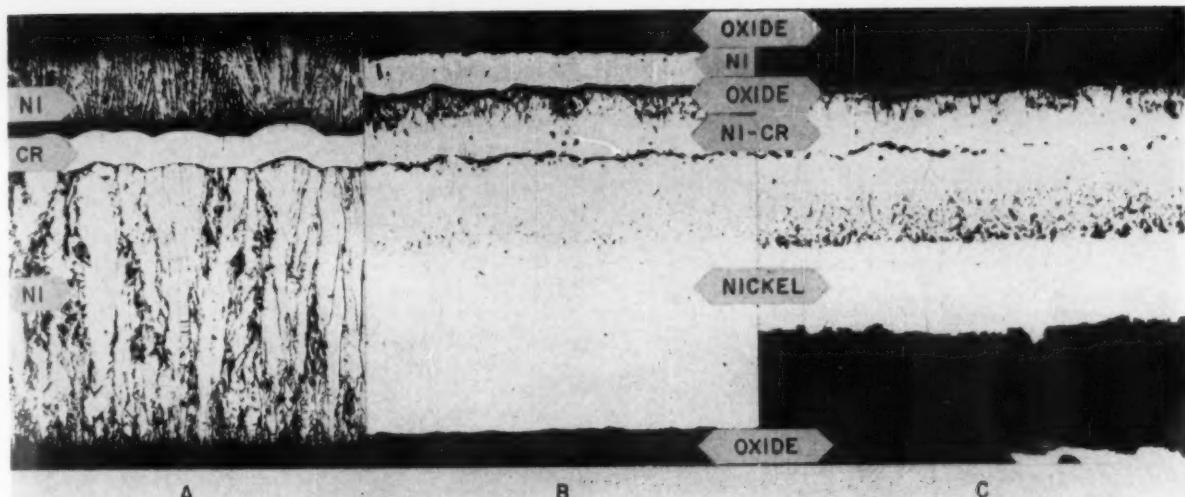
Trouble Spots—Subsurface oxide is due to reaction with atmospheric oxygen, not with oxygen trapped in the coating. It is apparently caused by diffusion of the atmospheric oxygen that passes through the nickel coating and reacts with the nickel-chromium alloy underneath. When samples were heated in a helium atmosphere, the oxide did not occur.

The boundaries of the metal crystals are more vulnerable to oxygen attack. For this reason, grain-boundary oxidation directly follows the boundary of the grains.

Edge separation occurs within the chromium-nickel diffusion layer when a sample is alternately heated and cooled several times. This

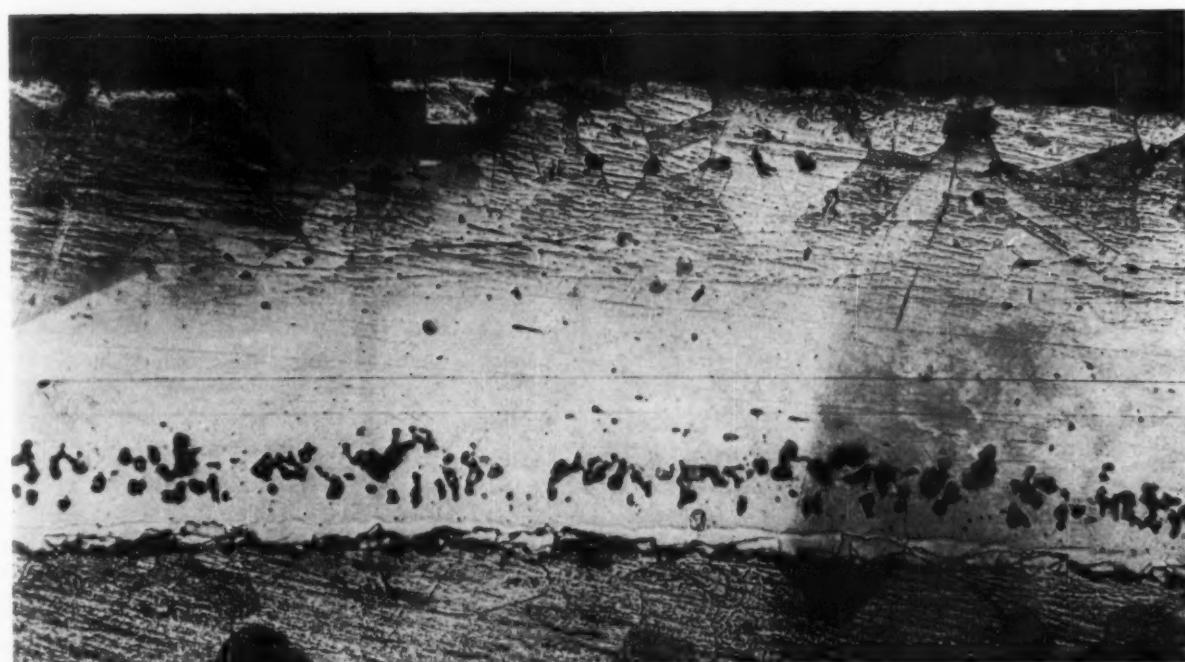


TEMPERATURE: Both temperature and nickel thickness affect the length of time coated molybdenum can withstand oxidation. Oxidation is prevented for over 1000 hours at 1796°F, only 300 hours at 2012°F.



PROTECTIVE COATINGS: Electrodeposited Ni-Cr-Ni is shown in cross-section. "A" is initial sample

with coating. "B" and "C" show extent of oxidation at 2012°F after 70 and 300 hours, respectively.



CLOSE-UP: "Diffusion bar" of molybdenum plated with 0.002 in. of Cr and 0.014 in. of Ni, after 600

hours of heating at 2012°F. (100X) At this stage, 1 to 2 pct Mo has diffused into the outer layers.

type of defect actually produces a gap within the layers.

Some Diffusion—To observe the effect of molybdenum diffusing through the coating, a study was also made of the interdiffusion of all three metals. For this test, a bar of molybdenum was plated with 0.002 in. of chromium and 0.014 in. of nickel and then heated in

hydrogen. After 600 hours, 1 to 2 pct of the molybdenum had diffused to the surface.

Although this metal could be detected through 0.010 in. of nickel, no structural changes were noted. Apparently, small amount of molybdenum which diffused into the surface do not appreciably affect the grain structure of the

chromium-nickel alloy coating.

Further investigating the three types of defects, electroformed nickel instead of molybdenum was coated with chromium and nickel and then oxidized. Again the three defects occurred, proving that molybdenum is not directly involved in these major sources of failure.



SOLVES CLEANING PROBLEM: No hand touches these laminations—ultrasonics does the cleaning job.

Sonics Cleans Delicate Parts

Mu-metal laminations are more than just delicate parts. These parts depend on proper cleaning for their very usefulness.

Ultrasonics not only does the job where other methods fail, but cuts the reject rate to practically nothing.

■ When the slightest nick or distortion will destroy the usefulness of a part, how do you clean it? Even a fingerprint will alter electrical characteristics of 0.004-in. thick mu-metal laminations, vital

to electronic brains and computers.

These delicate parts require cleaning before and after heat treatment. To solve this seemingly difficult cleaning problem, Sargeant & Wilbur Heat Treating Corp., Pawtucket, R. I., uses ultrasonics.

Project Sound Waves — Ultrasonic cleaners convert electric current to sound waves inaudible to the human ear. Project the waves through the bottom of a tank, and they create tiny bubbles in liquid solutions.

As quickly as they are formed—40,000 or more times a second—the bubbles collapse with tremen-

dous force relative to their size. This action known as cavitation blasts grease, dirt, chips and other contaminants from the surfaces of objects placed in the solution.

As received from cold stamping, the mu-metal laminations require degreasing. Sargeant & Wilbur uses a standard ultrasonic cleaning unit developed and manufactured by the Narda Ultrasonics Corp., Westbury, N. Y. Called SonBlaster, the cleaning device has a 1-gal capacity.

Easy Degreasing — The laminations, supplied by Allegheny Ludlum Steel Corp., Pittsburgh, are mounted 1000 to a jig. Five minutes

immersion in the cleaner using a chlorinated solvent bath does an effective degreasing job. Cleaned parts are then covered with powder to prevent sticking on the jigs.

Heat treating follows in a controlled atmosphere. The treatment eliminates the stresses introduced by cold stamping and improves electrical properties. Cracked city gas and anhydrous ammonia form the protective atmosphere.

The parts emerge free from scale or discoloration, but covered with powder partly cooked on. Here's where ultrasonics again comes into play.

Removes Cooked Powder—For removal of powder, the parts are placed in an ultrasonically agitated bath of detergent and warm water. In a 20-minute cycle cavitation removes all residue.

Easily handling four jigs at a time, the cleaner can turn out production at 12,000 laminations per hour. However, it's cleanliness that's the important factor rather than speed.

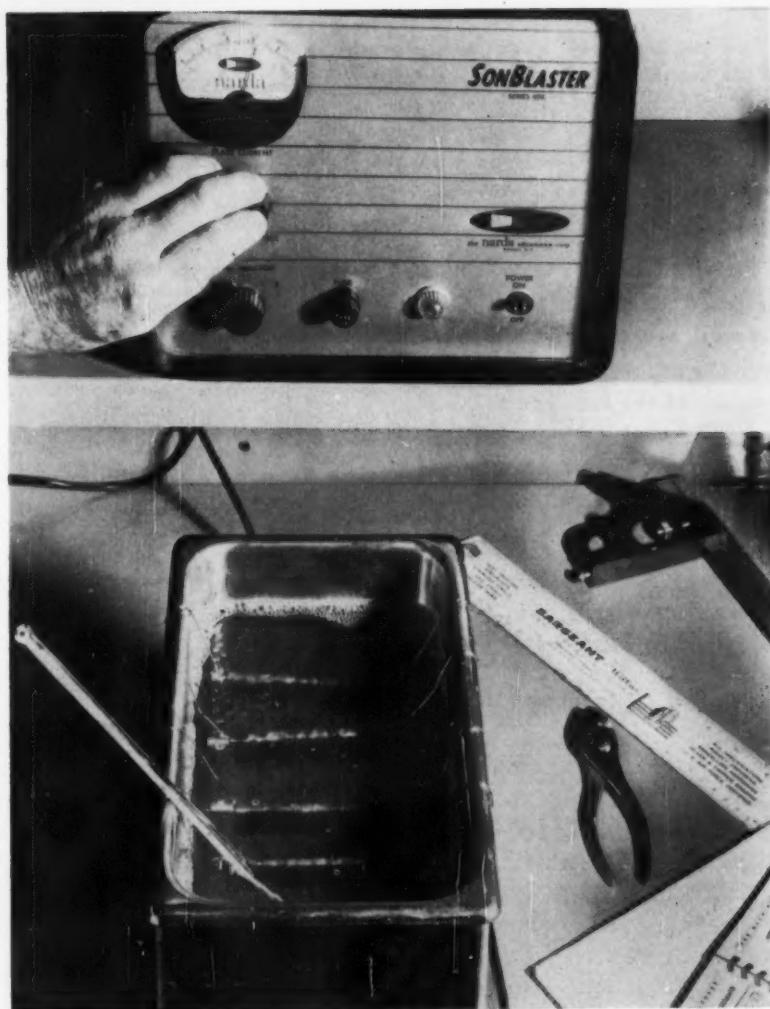
Tolerances point up the importance of cleanliness: Assembled packs of laminations have to meet specified dimensions within several ten-thousandths of an inch.

The success of ultrasonic cleaning is gaged by the reject rate. It's virtually nil, compared with earlier cleaning attempts in which rejects ran as high as 50 pct.

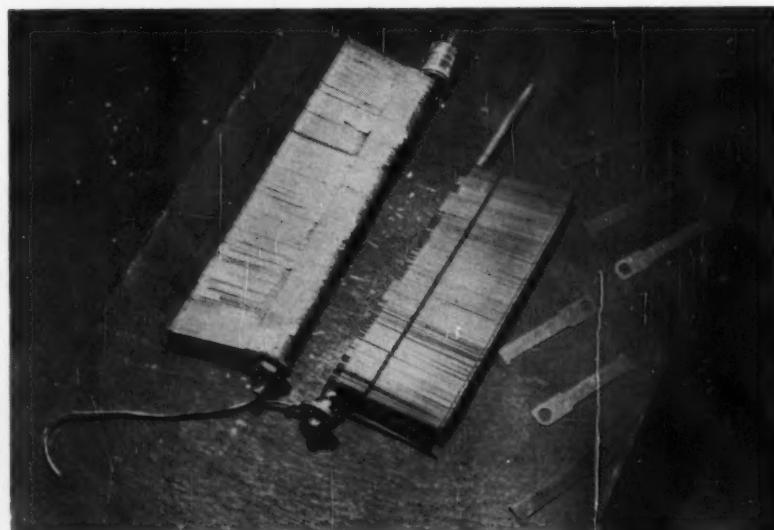
Choice Method—According to G. C. Sargeant, research and development engineer of Sargeant & Wilbur, "There is no method for cleaning these thin laminations mechanically. They present one of the most difficult heat treating and cleaning processes we face."

He goes on to say that ultrasonic cleaning enables the firm to complete the process satisfactorily and meet production schedules without trouble.

Ultrasonics does many cleaning jobs throughout the metalworking field with larger capacity units taking care of larger parts.



CLEANING UNDERWAY: Transducer under tank converts electricity to sound waves. Resulting cavitation blasts contamination from part surfaces.



REMOVES ENCRUSTED POWDER: Jig at right shows how stack has shrunk after ultrasonic cleaning. Low reject rate proves effectiveness.

New Grinding Technique Boosts Single-Point Tool Life

Here's a new "conical" way to grind single-point tools. It creates a uniform relief angle for cutting edges, puts more support at the nose radius.

The result: Longer tool life and more accurate machining.

In today's race with precision and production costs the metalworking industry may be overlooking the importance of one simple but vital factor. That's the tool point. The most precise machine is limited by the accuracy of the tool bit. A

problem in many shops is lack of consistency in the cutting edges of tools.

Offhand grinding, of course, just doesn't jibe with modern production demands. But you still see a lot of it in shops around the country.

There are other sources of tool trouble, too. Many of them stem from lack of understanding of the facts of tool life. That's the belief of DeVlieg Machine Co. engineers. They constantly face the problem of seeing that users get all the precision possible from their machine tools.

President and founder of the firm, C. B. DeVlieg—an old-time master mechanic himself—declares: "The cutting tool can make or break the machine. Even the best machine can't reach its top precision with poor tools." He confirms that many present machines could do better work with more accurate tools.

Fresh Look—The big question, of course, is how do you get consistent, accurate and geometrically correct tools? In his intense study of the problem, DeVlieg has turned it inside out for a fresh look.

"When we look at metal cutting," he explains, "we assume that the machines make the parts. They don't. The cutting tools make chips and leave the parts. The chip is the product and the part the by-product."

From this unique but practical viewpoint, DeVlieg finds that everything focuses on the tip (radius) of the tool point, which does the actual cutting. Not only must that be precise, but the relief angle, too, is critical.

Out of this study has come a new, shop-tested tool grinder. It is said to be the first one able to grind single point tool profiles geometrically correct to precise gage accuracy. It grinds tool points with either the usual cylindrical relief or the more desirable cone-type relief radius.

Why It's Better—The tip radius of a cutting tool is known to be most critical for part finish and tool life. This new system of tool grinding, then, is based on making all dimensions of the cutting edge relative to the center of the tip radius.

A typical profile of a boring tool, enlarged many times, Fig. 1, shows

Tip Grinding is Critical

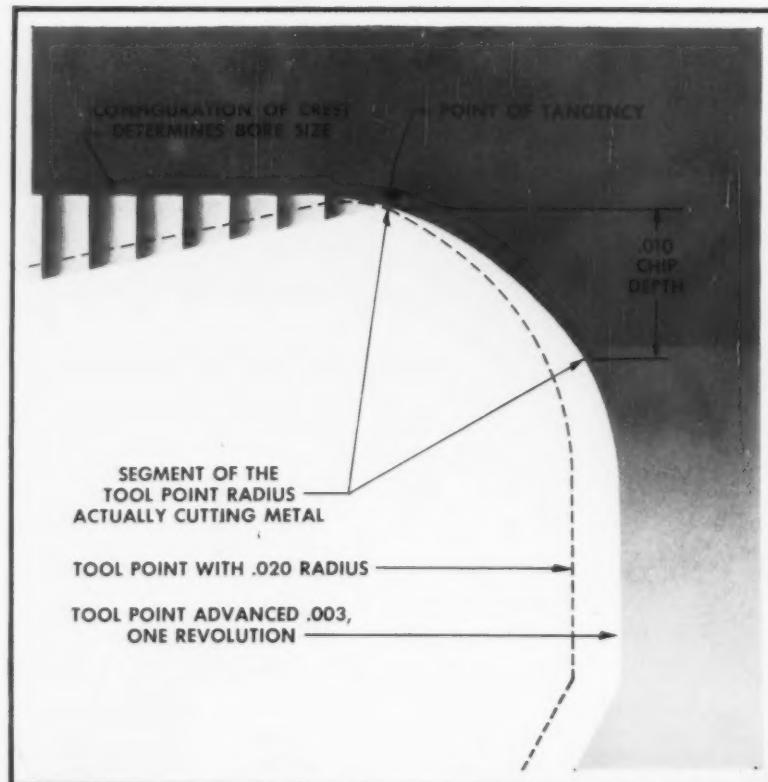


FIG 1: Enlarged view of bore surface generated by tool point shows that crest produced at tangent point affects size and surface finish.

How Grinding Methods Compare

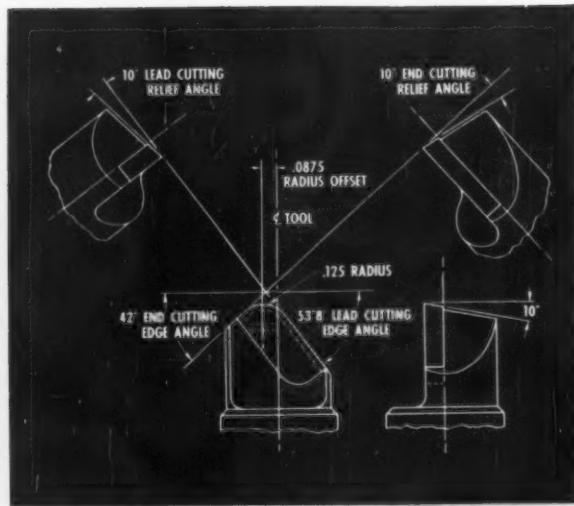
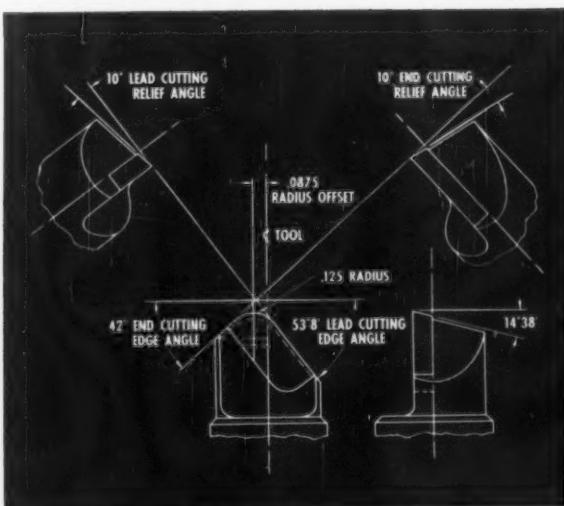
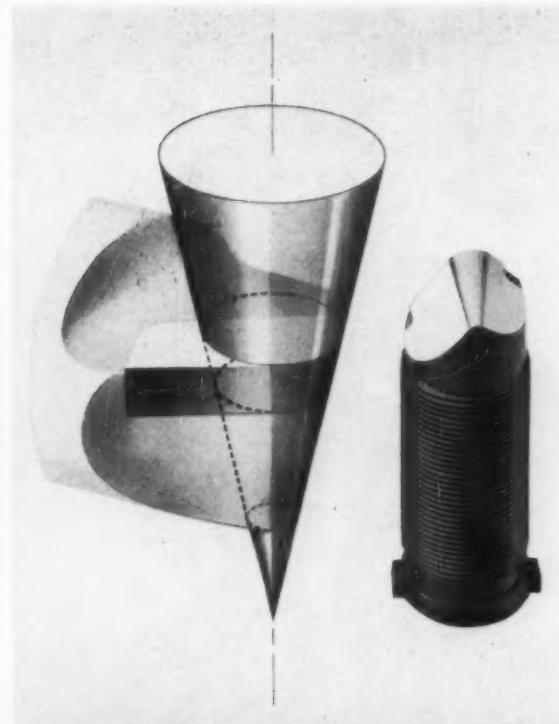
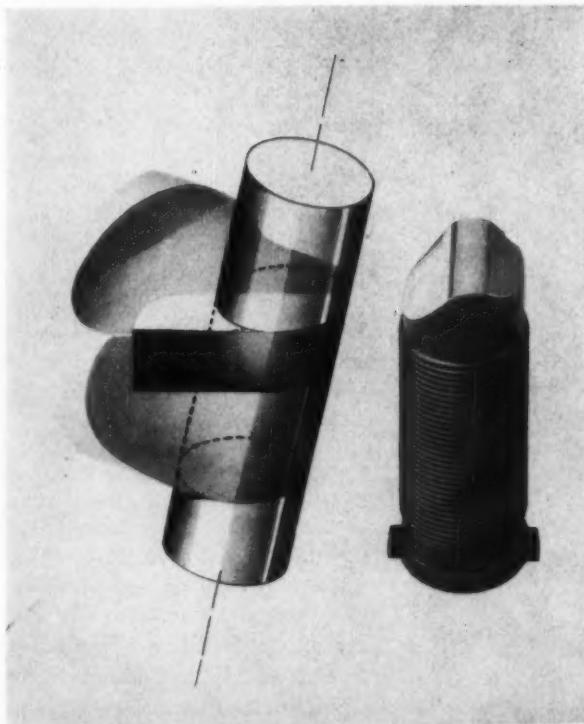


FIG. 2A: Conventional grinding practice produces a cylindrical tool point radius with varying relief angles.

FIG. 2B: DeVlieg grinder produces a conical tool point radius and a uniform relief angle for all cutting edges.

that the point of tangency between the radius and the end cutting edge is the part of the cutting tool that determines bore size and finish.

Unless the radius is accurately ground, so the tangent point is correctly located, the tool will not cut true. Size of the radius is critical to the material to be machined, per-

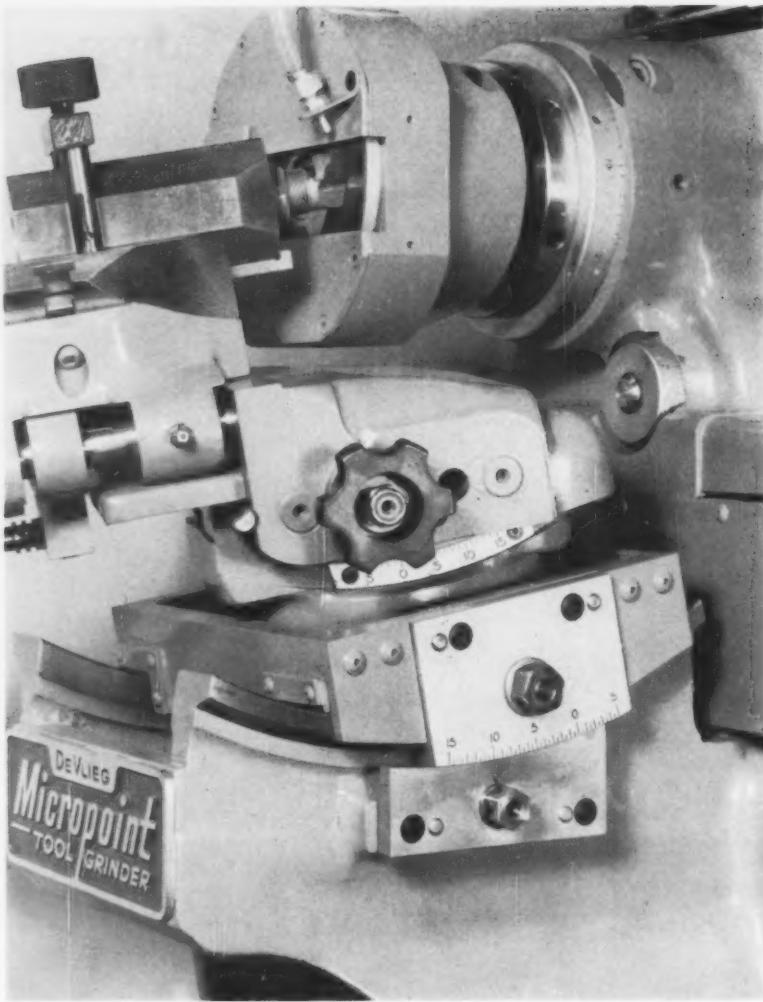
formance of the machine tool and life of the cutting edge.

Clearance Needed—An added complication is the clearance needed for most cutting tools. Typical offset and clearances show on the various views of the tools in Fig. 2. This also illustrates the dif-

ference between conical and cylindrical points.

In the ordinary setup for grinding cutting edges, the axis of rotation of the tool is parallel to the wheel face. This gives a cylindrical nose to the tool, Fig. 2A.

Gives Variable Relief—As the



FAST SETUP: Single point tool setup in new grinder to produce a geometrically correct (constant) relief angle of 10°.

diagram shows, the nose of this tool has the same radius at whatever height you take a cross section. But the clearance with this cylindrical form varies. It's greatest at the tool centerline, but drops off on either side to zero at the 90° or side position.

To get the desired 10° relief angle for the end and lead cutting edges, you must set the angle up to 14° 38' at the centerline, as the side view of the tool shows.

But now this tool has excessive clearance at the most important part—the nose radius. The greater angle weakens this vital edge and decreases tool life.

On the other hand, by grinding

with the axis of rotation perpendicular to the centerline of the tool, you get a constant 10° relief. This tool point looks like a cone, Fig. 2B. Theoretically it should be a stronger point, yielding finer finishes, closer tolerances and longer tool life.

Proved in Use—Actual tests and production runs in shops bear this out. Some 35 tool grinders have been in use for periods up to a year. Experience ranges from aircraft precision to high volume automotive production.

Tool life with the cone-type point ranges from 15 to 50 pct longer. Machined parts are also reported to

show improved finish and uniformity. This means more output per operator, with fewer rejects. In automated operations, more pieces per tool grind means a drop in costly downtime while production goes up.

In one case, the new DeVlieg grinding method got the Federal Works plant of Thompson-Ramo-Wooldridge, Inc., out of a tooling bottleneck. On a new machining job, engineers found inaccuracies in the pre-set carbide tool bits. Grinding them with the DeVlieg system solved the problem and boosted tool life from 35 to 40 pieces to 125 parts per grind.

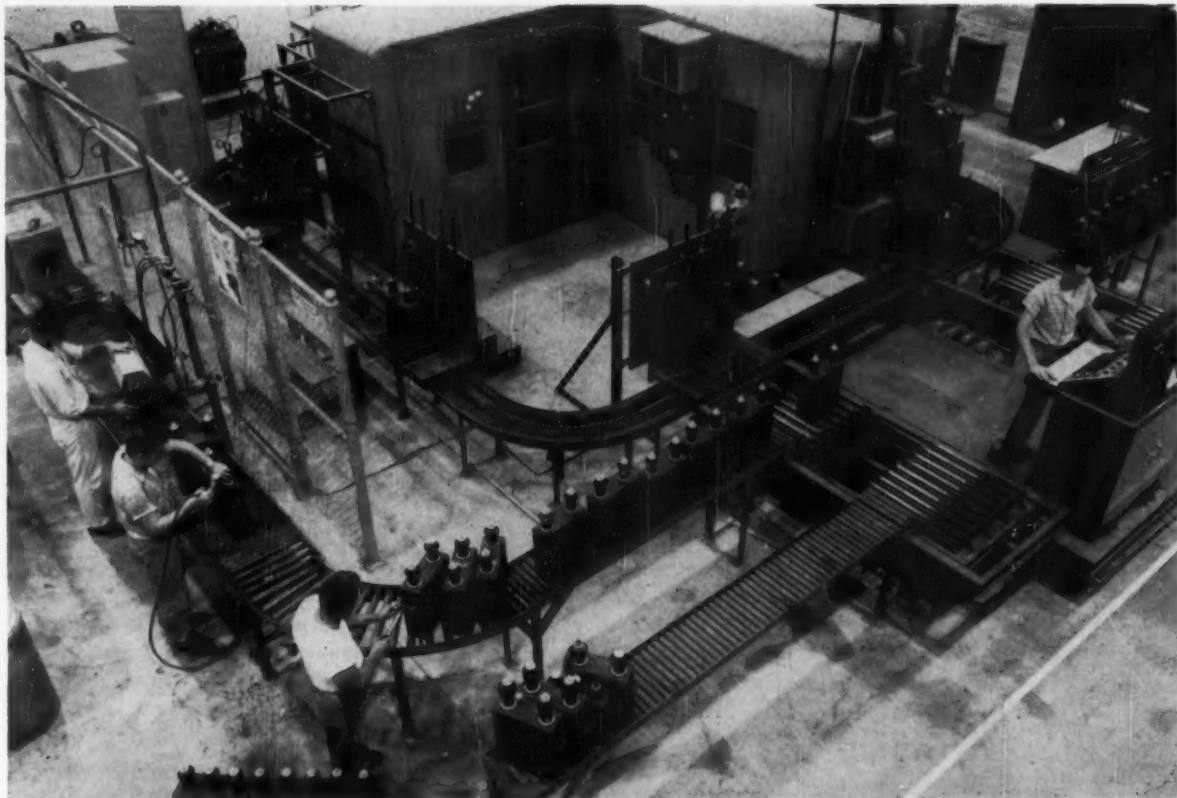
Real Advantages—This system of grinding single point tools offers several practical advantages. For one thing you can do the complete job on one machine. And with detailed protractor settings, duplicate tools for production jobs can be ground quickly and accurately.

Shop tests with clusters of tools suggest it will now be possible to do multiple cuts of several diameters and faces impossible before, because of tool adjustment complications. The Ford Sterling Chassis Parts Plant confirms this. Manufacturing engineers there report greater speed and accuracy in setups. They say the system is especially good for tools that require complex setups.

Also, improved accuracy of the tool-tip radius pays off in tracer machining, because it can be ground to exactly match the stylus of the tracer.

In tool development, the system can shortcut procedure. Protractor readings from the grinder, for instance, can serve as a basis for tool drawings and tryout comparisons.

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REDUCES HUMAN ERROR: One man (far right) operates eight-station automatic Cypak-controlled test center.

Automated Plant Stays Flexible

Proof again that automation needn't restrict product mix or design changes is this new electrical apparatus plant.

Flexibility is its keynote. Yet, it provides high output of diversified products.

■ Westinghouse Electric Corp. has officially opened its new switchgear distribution apparatus plant near Bloomington, Ind.

The one-story, 253,000-sq-ft factory was designed specifically for making power capacitors, lightning arresters, fuse cutouts, oil circuit reclosers and switches, coupling capacitors, and line traps. The entire layout is highly conveyorized and in certain areas automated. Still, the plant is arranged for flexibility to

take care of changes in product mix and design.

In addition to the factory area, a two-story office building provides 35,000 sq ft of space for sales, engineering, purchasing, industrial relations, accounting and administration. This makes the distribution apparatus department a self-contained unit in the corporate structure.

Manufacturing and testing of capacitors is automated, with the line divided basically into four areas: section winding, assembly, impregnating, and testing.

Section winding is done on multiple-mandrel machines. Assembly includes fabrication of cases into which the sections are placed.

Automatic Test Center—Capacitor testing is highly automated with

a Cypak - controlled carousel - type test center. One man operates it.

Engineering laboratories in the new plant handle 95 pct of all test work required for research and development of new products. The rest is done at the firm's laboratories in East Pittsburgh, Pa.

The finishing department at Bloomington is equipped with an automatic bright dip machine. It cleans a large volume of work, both for electroplating and for internal parts of lighting arresters.

Each silicon carbide lightning arrester block is given a power test. In addition, a nine-station automatic test and inspection machine checks and sorts lightning arrester gap resistance spacers.

The plant's seven acres of floor space also include shops and labs.

System Removes Scrap With Underfloor Belts

An underfloor conveyor goes about its job of collecting scrap from many machine tools.

It rids the plant of need for clumsy man-operated equipment.

■ Building a new plant has given a firm the chance to integrate scrap handling into an automatic system. Backbone of the system is an underfloor conveyor.

It frees scrap-handling workers for higher classified jobs. There's no need for containers, tote bins and fork-lift trucks.

Space Saver—Designed and built

by Gifford-Wood Co., Hudson, N. Y., for General Electric Co.'s new plant at Louisville, the system works quietly underground. With no lanes needed between pieces of equipment to get trucks in and out with scrap bins, 15 pct more floor space is available.

To prevent wedging and spilling of assorted scrap, the conveyors feature hinged-pan units. Running in concrete trenches, the conveyors collect scrap from production areas, transfer it out of plant and load it into gondola cars for disposal.

Seven feeder conveyors discharge scrap into a main collecting con-

veyor. A transfer conveyor then removes the scrap from the building and a carloading conveyor lifts the scrap to a chute above a gondola car.

Planning Pays — GE provided data on conveyor capacity and dimensions, and weight of scrap. Gifford-Wood then drew a floor plan of the trenches, transfer points, floor plates and control stations.

Approved, this plan allowed GE to locate equipment with the most economical use of space before construction got underway. Trench building took place while the foundations were being laid.

Conveyor framework in 10-ft lengths bolts to the floor of the trenches. The conveyor itself comes in 4-ft lengths for easier installation.

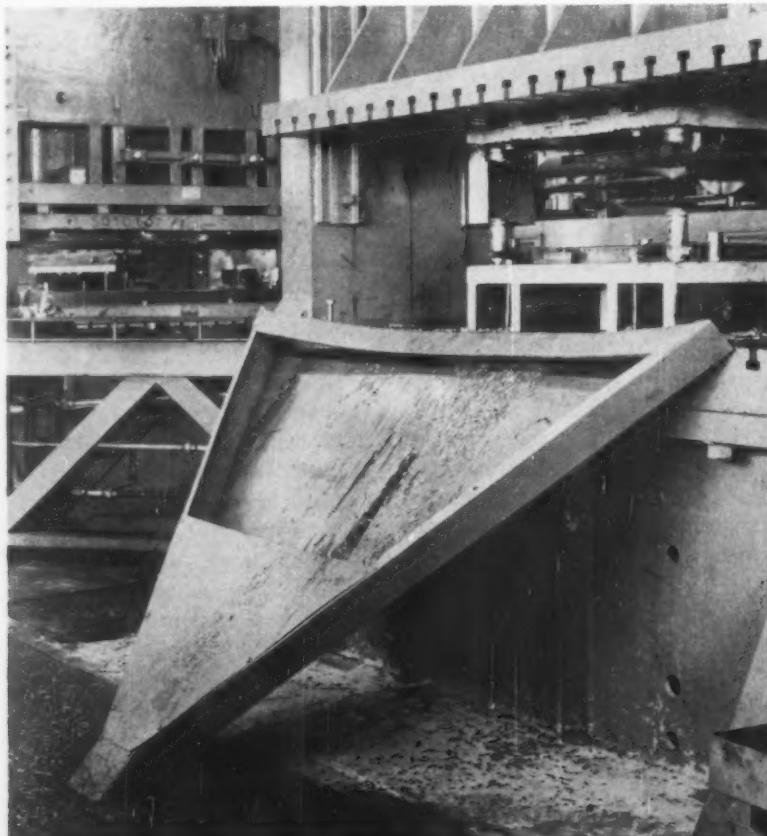
Starts with Chutes—Arranged in parallel rows beneath floor level, the seven feeder conveyors receive scrap through chutes which serve dies of machines. The feeders, operating at 30 fpm, empty into the central collecting conveyor, placed at a lower level.

This 213-ft conveyor runs to a transfer point where its load falls to a transfer conveyor on a still lower level. This transfer section runs at a right angle towards the carloading conveyor.

As the carloading conveyor picks up scrap from the transfer conveyor, it elevates the scrap diagonally to a chute which empties into gondola cars.

Prevents Wedging—The hinged-pan conveyor, with its closely-fitted joints, prevents jamming up. Also, the conveyor pans with continuous side flanges create a deep moving pan to keep scrap from spilling.

Two easily replaceable parts, a



CHUTES DELIVER: Metal scrap slides down through chute to automatic conveyor system which serves 56 punch presses and 4 shears.

roller and bushing on each hinge pin, take all the mechanical wear during normal operation. These two parts connect the chain drive to the conveyor. To replace both parts in minutes, all it takes is removal of a press-fit cotter pin.

Each conveyor is a self-contained unit with the motor drive at the head shaft. A tail shaft assembly has return chain wheels and take-up terminals for adjustment.

Interlocks for Safety—Electrical interlocks protect conveyors from damage from improper starting or overloading. The system consists of electrical holding relays and no-motion shut-off switches.

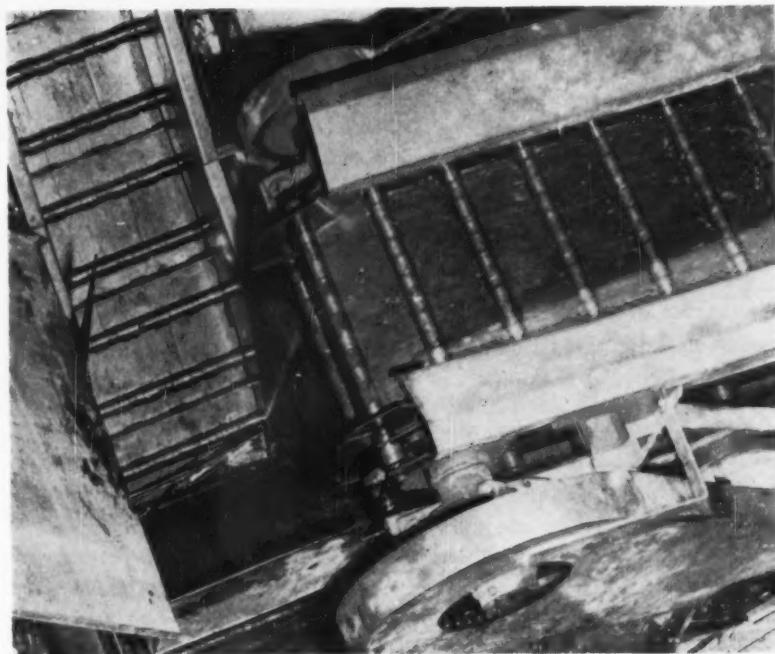
With these safeguards, the conveyors can operate unobserved beneath floor level. Holding relays prevent any conveyor from starting when the following conveyor is not running. Buttons at the main control panel must be pushed in proper sequence.

To prevent damage from overloading should any conveyor stop due to electrical or mechanical failure, a no-motion switch connected to the chain wheel drive shuts off power to the other conveyors. The system is inoperative until the trouble spot is corrected.

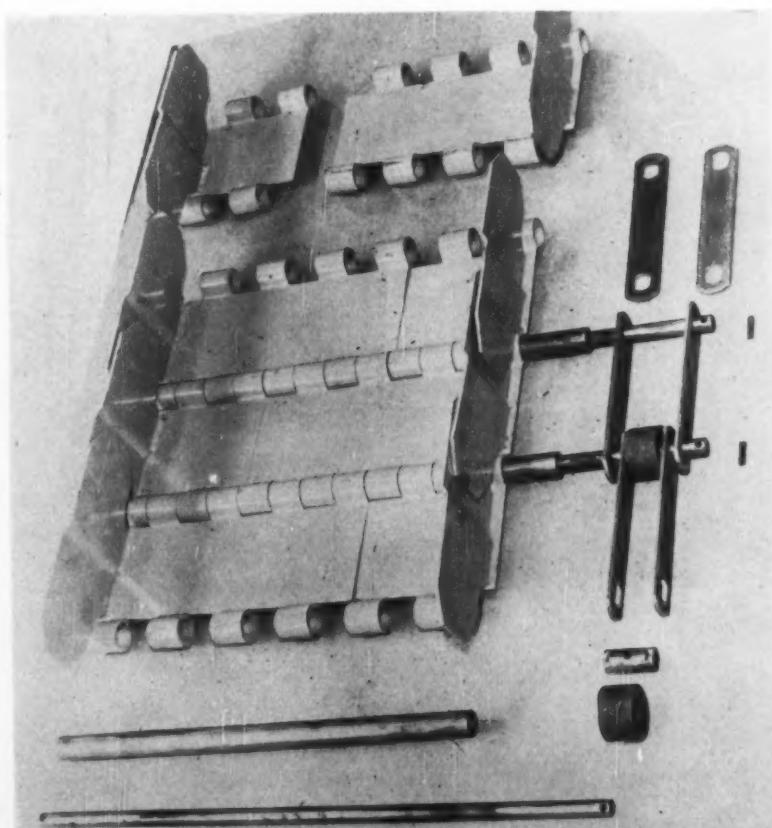
Vanes Open Circuit—The no-motion unit consists of an oil chamber in which vanes rotate. The vanes, forced out in a governor-type action, maintain a closed electrical circuit as long as the conveyor runs. When rotation ceases, the vanes withdraw to break contact and open the circuit.

The only moving parts requiring lubrication are the rollers and bushings. An oil spray unit, consisting of a 2-gal glass reservoir and eight spray fittings, is set up near the drive shaft of each conveyor.

Since beginning operation in March of 1957, the conveyors have run 8 hours a day, 5 days a week without mechanical breakdown. Additional conveyors can be added since the main collecting conveyor has adequate reserve capacity.



CONTINUOUS HANDLING: Transfer conveyor removes scrap from building and dumps it into inclined conveyor leading to carloading chute.



HINGED-PAN UNITS: Tight fitting units carry scrap without jamming. Continuous side flanges create a deep moving pan to prevent spilling.

How to Cut Costs Through Quality Control

By R. C. Trundle, Jr.—President, Trundle Consultants, Inc., Cleveland

Excesses of rejected parts or materials don't just happen. There's always a reason.

Here's help on tracking down the source of scrap and salvage items, plus other ideas for improving your quality control.

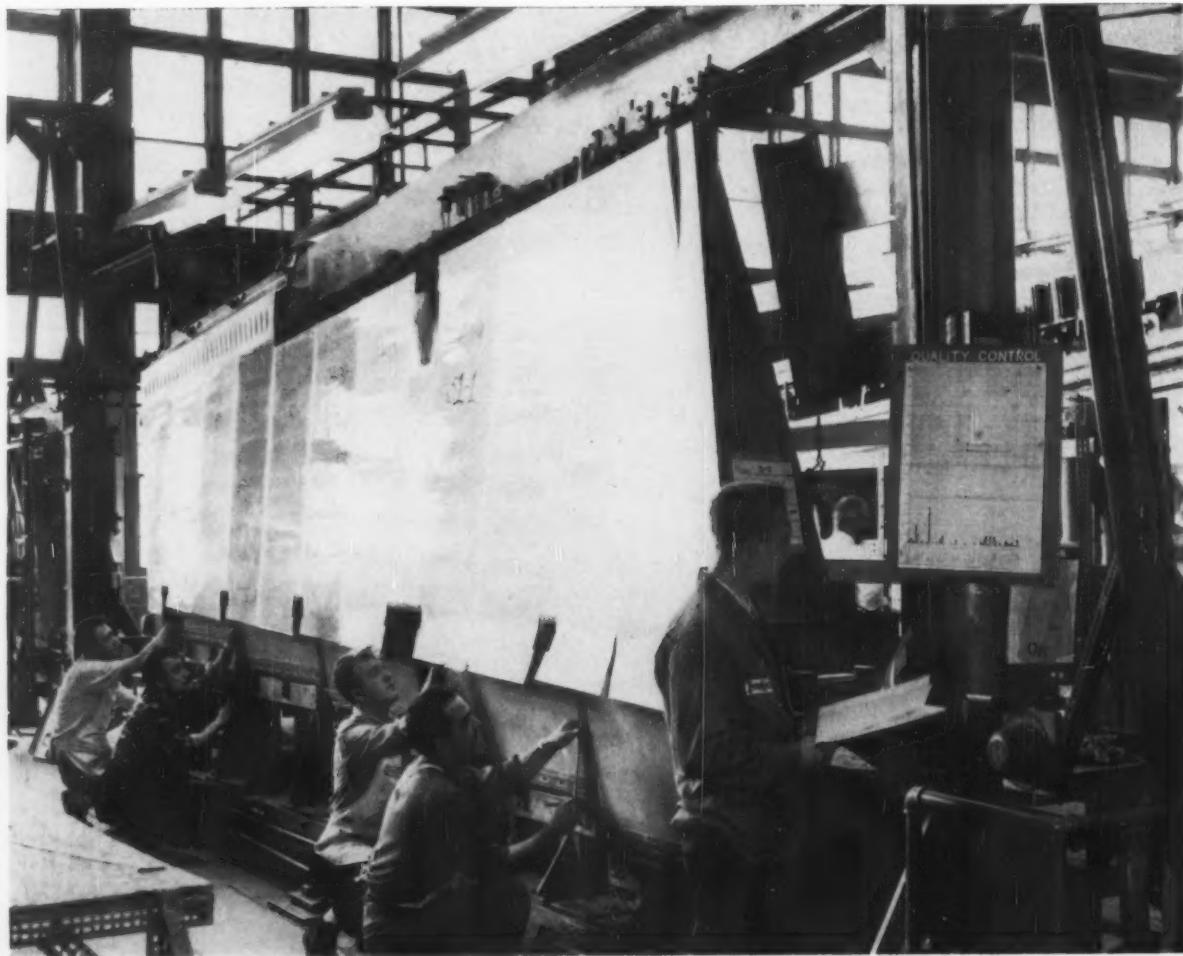
- Both big and small costs cuts may be made through quality control.

Most companies will turn up the biggest savings by tracking down who or what is responsible for scrap or salvage. Almost every form of industrial control is built around "responsibility." And yet, this key factor is often lacking in quality control.

For example, an inspection report may note: "27 parts with loose welds," or "86 units with bent shafts." Many firms insist on such

reports. Still, it's the rare company that makes a determined effort to find out who or what is to blame, and why. This situation exists in many organizations that have excellent quality control procedures otherwise.

A Real Problem—Such was the case with an appliance maker. Its scrap rate was 30 pct above normal and the salvage rate 25 pct above normal. Yet the firm had excellent



CLOSE CHECK: In plant of Twin Coach Co., Buffalo, inspectors plot defects on quality control charts.

inspection techniques and kept complete, up-to-date records.

For a solution to the problem, the firm started looking into a wage incentive plan which applied to all pieces produced, whether they were good or bad. Management thought a modified plan to pay only for good pieces might bring substantial savings.

Surprising Answers — The study turned up some surprising facts. For example:

1. Workers were responsible for only 13 pct of the salvage and 3 pct of the scrap.

2. Changing the incentive plan would cause performance to drop off by 0.5 pct. This would more than wipe out any savings to be gained by paying only for good pieces.

3. The modified plan would mean hiring more inspectors to identify workers responsible for scrap and salvage. This would cost more than twice as much as it would save.

4. Savings to be gained by tightening up management's responsibilities for scrap and salvage were fully four times greater than the potential in the modified incentive plan.

The Actual Causes — So the study showed conclusively what really caused high scrap and salvage rates: materials not according to specifications; certain equipment not working properly; poor maintenance; faulty temperature control in ovens; even poor design. When these faults were corrected, the firm realized operating economies of more than \$100,000.

There are other places to reduce costs through quality control, also.

Take "standards," for example. Many firms set up quality standards that are far too stringent for the end use a product will get. If management isn't alert, it's easy for misguided people to insist on standards which aren't necessarily in the company's best interests.

Open Up Tolerances — In the main, it's well to permit maximum tolerances consistent with a product's end use. This makes for easier

Scrap and Salvage Too High?

HERE'S HOW TO CUT THESE COSTS:

1. Start with one department Choose up to six typical parts that originate in or go through that department.

2. Follow each part through each operation. Record how, where and when inspections are made. Evaluate, in writing, all factors which lead to rejects.

3. Get a record of one month's scrap and salvage for each part at each inspection point.

4. Get the cost per hundred of scrap and salvage items. For scrap, use the standard material, labor and variable burden up to the last operation performed. For salvage, use salvage labor cost and salvage department variable burden.

5. Assemble the information in steps 3 and 4 into a detailed report.

6. Here you must know what normal scrap and salvage is for the parts you're studying. This is how you gage what you can save by locating and correcting conditions that cause excesses. If you do not know what is normal, assign a committee to come up with the answers.

7. Place the responsibility and take corrective action.

8. Now decide if it will pay you to make similar comprehensive studies of other operations and departments.

planning, production, and inspection; it keeps operator and machine costs down; and it saves the need for extra skills and extra operations.

Another potential spot for cost-cutting is the cost of inspection. Many firms still do an expensive 100-pct inspection job where it isn't really necessary. In most cases it's ineffective, because inspectors get bored doing repetitive work.

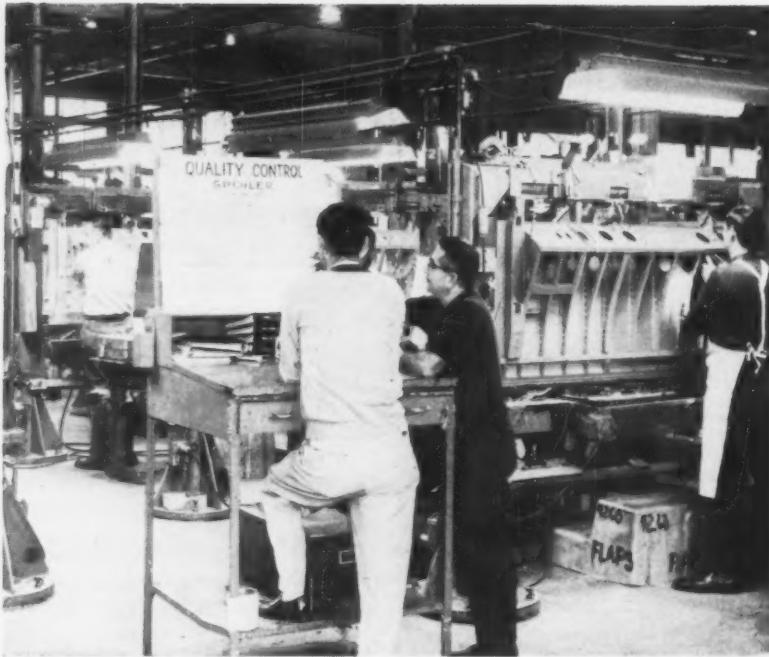
On the other hand, properly designed sampling techniques can be very accurate. They can also cut inspection costs by as much as 90 pct.

Takes Full Knowledge — Good quality control demands knowledge

of the capability and performance of all equipment, materials, processes and manpower. Given this knowledge when a new production effort is planned, it's easy to set up the proper equipment and know in advance the level of quality you'll get.

Use careful judgment in applying statistical control, however. Be mindful of the cost as well as the benefits. Where the value of a piece is high, the chance for error great, and the operations not continuous, statistical control may not be justified.

On the other hand, when there is



WARNING SIGNAL: Production foreman and inspector (center), alerted by the control chart to a case of repetitive defects, discuss the problem.



NEED ANALYSIS: Data on the nature and frequency of defects must be analyzed carefully to isolate the causes and indicate corrective action.

but slight chance for error, a steady flow of parts, and a difficult inspection job, statistical control will generally prove to be economical.

Cut Receiving Costs—The receiving operation also offers opportunities for cost cutting. One way is through vendor certification. Here the buyer and seller discuss the end use for the vendor's product and agree on what will constitute a satisfactory final inspection by the vendor. The vendor then certifies each lot delivered, stating when it was inspected, and by whom.

This saves the buyer the time and expense of needless duplicate inspections. The buyer should, of course, inspect a vendor's products from time to time and keep a careful record of performance.

Try Rating Vendors — Vendor rating is another technique for cutting the cost of receiving inspection. An aircraft manufacturer did this with a particular group of suppliers, thereby cutting lot-rejection expense from \$24,000 to \$12,000 per month. The firm also gained enough confidence in top-rated vendors to cut its own receiving inspection somewhat. This brought added savings.

Taking fabricated parts to a special inspection area can be costly, too; especially if the final checkup merely duplicates previous inspections. The extra handling is expensive, and a lot of money stays tied up in goods in process.

Essentially, quality control data and the activity patterns it represents must be recorded so management can see at a glance what is happening and what to do about it. If the data can't be used for fast action, the whole of a company's quality control program is costing more than it's worth.

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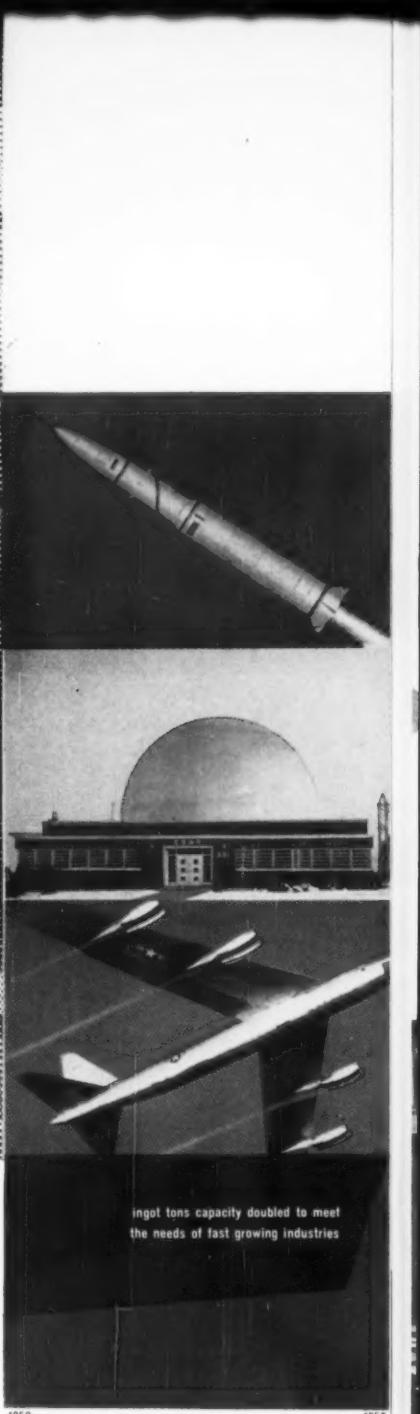
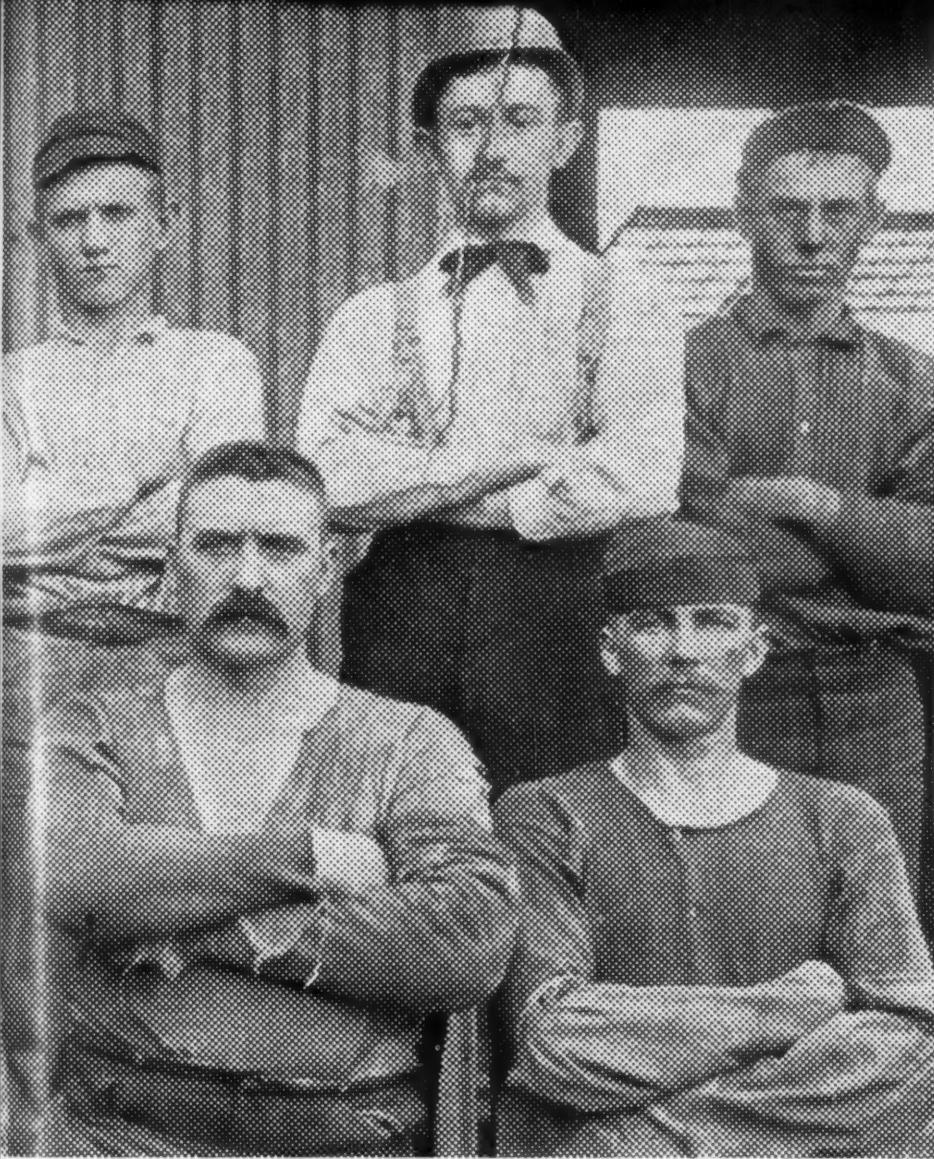
management problem

Back in 1898, Tom Corbley (*front row, left*) and his Melting Crew were a proud and imposing lot. The Spanish-American War was on. And the nation's eyes were focused on the unique little mill in Reading, Pa., that was busy turning out the world's largest production of newly-discovered, armour-piercing projectiles.

Since 1898, the spectre of Tom Corbley's crew has presented a problem to *Carpenter* management that has been almost 70 years in the solving—how to apply the skills and pride of workmanship exemplified by Corbley's men, to the formulation, the production, and then the mass-production of the world's finest specialty steels.

Today the problem is solved. But it was a gradual process. Because *Carpenter* was born a small Mill, it has been free to grow slowly—to maintain purest quality in every pound of specialty steels it released to industry. Quality . . . and only the finest quality . . . before mass-production.

Today, both are possible. With the acquisition of steelmaking facilities in Bridgeport, Conn., *ingot tonnage capacity has*



been doubled almost overnight. Additional electric arc melting furnaces, rolling mills, new annealing and heating furnaces, and other finishing equipment . . . each with *Carpenter's* unique quality controls . . . started operating in the past year.

In the years ahead, *Carpenter* will continue to grow—to keep pace with the ever-increasing demands of industry—for the world's finest specialty steels.

tool and die steels

stainless steels

electronic and magnetic alloys

special-purpose alloy steels

valve, heat-resisting and super alloy steels

tubing and pipe

fine wire specialties

The Carpenter Steel Company
Main Office and Mills, Reading, Pa.
Alloy Tube Division, Union, N. J.
Webb Wire Division, New Brunswick, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.



NEW DESIGN



data for
**Pearlitic
Malleable**
in this
NEW BOOK!

This 76-page handbook furnishes an introduction to pearlitic malleable as well as a ready reference to the latest information and data on pearlitic malleable obtained from many sources by the Malleable Research and Development Foundation.

Pearlitic malleable is a relatively new material in the metallurgical field, and its increasing application in castings for critically loaded structural parts in modern machines and other products of all kinds, testifies to its acceptance by quality-minded engineers. Pearlitic malleable has toughness and machinability at high strength levels and is relatively low in cost.

A new design approach to pearlitic malleable specifications is presented in three charts that show the relationship between physical properties and Brinell hardness. The charts furnish the information required to translate basic design needs into final specifications.

All the facts and figures needed for pearlitic malleable design are here in this handbook. Any person responsible for the specifying or selection of materials is invited to send coupon today for complimentary copy.

IA-1

MALLEABLE RESEARCH AND DEVELOPMENT FOUNDATION
Granville, Ohio

I can use the Modern PM Castings Handbook in my work.
Please send copy to:

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POSITION		
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You Arbitrate It!

THE CROOK & THE BRAWLER

From the files of

The American Arbitration Association

- Management of a machine shop filling defense contracts, arranged to clear about a hundred employees for "secret" work. Investigation disclosed two workers had criminal records which each concealed while applying for his job. One had paid a fine for being in possession of stolen goods; the other had been jailed for drunken brawling.

The personnel manager confronted both with the facts. He reminded them discharge for falsification of employment applications was strictly enforced. He induced them to quit "voluntarily" so as not to hurt their chances for another job. Both accepted that way out.

Changes Its Mind — Things got busy in other parts of the shop, though. The company decided it could use the two men in a "non-sensitive" department. So they were rehired as new employees. At that point the union filed a grievance.

"The whole effect of this has been

to deprive men of their seniority for disciplinary reasons," argued the steward. "That's not a proper form of discipline." The personnel manager answered that there was no discipline involved in the case at all. The two men had quit their jobs and now they were coming back as new workers. That's all there was to it. How would you rule?

The Arbitrator Ruled:

The issue wasn't whether the men had been discharged for just cause or had quit, since no grievance was filed at that time. In either event, they had lost all their seniority. Particularly since they were told at the time of rehiring that they were coming in as new employees. There was no contract violation on the part of the employer.

CAUTION: The award in this case is not necessarily an indication of how arbitrators might rule in apparently similar disputes. Each case is decided on the basis of the particular history, contract, testimony and other facts involved. Some of these essential details may have been omitted in condensing the original arbitration for brief presentation.

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Buenos Aires, Calcutta, Dusseldorf, Montreal, Rio de Janeiro, Sydney, Tokyo

FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 85.

Wire Rope

If "handbook" applies to any company literature, it applies to a 190-page work of a wire rope firm. Tab indexed, it gives answers to queries like: What is 6x19 classification? Or peening? Rated capacity? Metallic core? Swaged fittings? It abounds with data. (MacWhyte Co.)

For free copy circle No. 1 on postcard, p. 85

Barrel Finishing

Now you can get all barrel finishing media from one source. A brochure gives details. (BMT Mfg. Corp.)

For free copy circle No. 2 on postcard, p. 85

Chain, Attachments

In 98 pages a catalog features a comprehensive line of roller chains, sprockets, conveyor chain attachments. Also given are engineering formulas. (Acme Chain Corp.)

For free copy circle No. 3 on postcard, p. 85

Architectural Metal

Standard curtain wall systems for one and two-story buildings are presented in an 8-page brochure. Systems include: mullions, windows, spandrel panels and accessory metal parts. Spandrel panels are aluminum faced and backed with either styrofoam or cement-

asbestos lamination. They come in 20 colors. (Reynolds Metals Co.)

For free copy circle No. 4 on postcard, p. 85

Insulating Refractory

For insulating and refractory service, a foamed silica material is 99-pct pure fused silica. Practical operating range: —450° to +2200°F. A booklet lists properties, uses. (Pittsburgh Corning Corp.)

For free copy circle No. 5 on postcard, p. 85

Abrasive Head

Ranging in abrasive widths from 2 to 50 in., a unique sanding head finishes contoured aluminum surfaces. Adaptable to automated setups, the heads "scratch finish" other materials, too. (Abrasive Machinery Corp.)

For free copy circle No. 6 on postcard, p. 85

Precision Press

Of 1½-ton capacity, a small precision press is covered in a data sheet. It boasts an adjustable brake and generous die space, despite its size. (Perkins Machine Co.)

For free copy circle No. 7 on postcard, p. 85

Steel Culverts

Solving drainage problems with sheet steel culverts is discussed in a 76-page booklet. It covers assets, fabrication, design and installation of the copper-bearing galvanized corrugated culverts. (Bethlehem Steel Co.)

For free copy circle No. 8 on postcard, p. 85

Welding, Cutting

Gas welding and cutting equipment is listed in a catalog. Its 32

ACCEPT

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SUBSTITUTE

**MEEHANITE CASTINGS ARE MADE ONLY
BY MEEHANITE FOUNDRIES**

The American Laundry Machinery Co.,
Rochester, N. Y.

Atlas Foundry Co., Detroit, Mich.

Banner Iron Works, St. Louis, Mo.

Barnett Foundry & Machine Co.,
Irvington, N. J.

Blackmer Pump Co., Grand Rapids, Mich.
E. W. Bliss Co., Canton and Toledo, Ohio
and Hastings, Mich.

Centrifugally Cast Products Div., The
Shenango Furnace Co., Dover, Ohio

Compton Foundry, Compton, Calif.

Continental Gin Co., Birmingham, Ala.

The Cooper-Bessemer Corp.,

Mt. Vernon, Ohio and Grove City, Pa.
Crawford & Doherty Foundry Co.,
Portland, Ore.

Empire Pattern & Foundry Co., Tulsa, Okla.
and Bonham, Texas

Florence Pipe Foundry & Machine Co.,

Florence, N. J.

Fulton Foundry & Machines Co., Inc.,
Cleveland, Ohio

General Foundry & Mfg. Co., Flint, Mich.

Georgia Iron Works, Augusta, Ga.

Greenlee Foundries, Inc., Chicago, Ill.

The Hamilton Foundry & Machine Co.,
Hamilton, Ohio

Hardinge Company, Inc., New York, N. Y.

Hardinge Manufacturing Co., York, Pa.

Johnstone Foundries, Inc., Grove City, Pa.

Kanawha Manufacturing Co.,

Charleston, W. Va.

Kennedy Van Saun Mfg. & Eng. Corp.,

Danville, Pa.

Koehring Co., Milwaukee, Wis.

Lincoln Foundry Corp., Los Angeles, Calif.

Nordberg Manufacturing Co.,

Milwaukee, Wis. and St. Louis, Mo.

Palmyra Foundry Co., Inc., Palmyra, N. J.

The Henry Perkins Co., Bridgewater, Mass.

Pohlman Foundry Co., Inc., Buffalo, N. Y.

Rosedale Foundry & Machine Co.,

Pittsburgh, Pa.

Ross-Meehan Foundries, Chattanooga, Tenn.

Sonith Foundries of FMC, Indianapolis, Ind.

Standard Foundry Co., Worcester, Mass.

The Stearns-Roger Mfg. Co., Denver, Colo.

Valley Iron Works, Inc., St. Paul, Minn.

Vulcan Foundry Co., Oakland, Calif.

Washington Iron Works, Seattle, Wash.

Dorr-Oliver-Long, Ltd., Orillia, Ontario

Hartley Foundry Div., London Concrete

Machinery Co., Ltd., Brantford, Ontario

Otis Elevator Co., Ltd., Hamilton, Ontario



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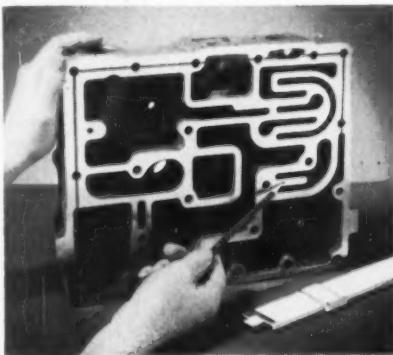
Bulletin 37-A: "Proof That Meehanite Bridges The Gap Between Cast Iron and Steel"

Write today to Meehanite Metal Corporation, Department IA, 714 North Avenue, New Rochelle 23, N. Y.

MEEHANITE®

THE IRON AGE, January 8, 1959

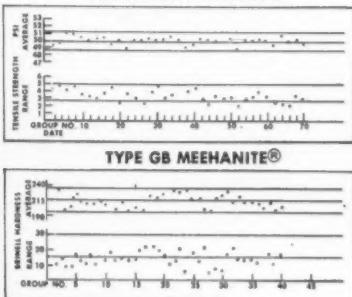
6 REASONS WHY DESIGN ENGINEERS SPECIFY MEEHANITE CASTINGS



1. CASTING SOUNDNESS

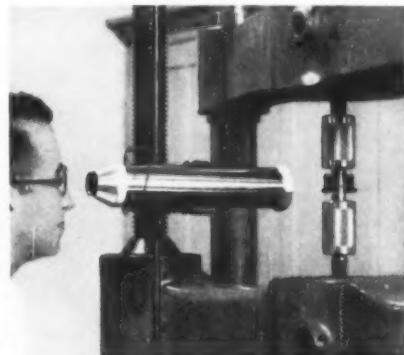
Of all casting properties this is the most important and is the BIG reason engineers specify Meehanite metal. They know from experience that Meehanite castings possess uniform strength and solidity through all sections, regardless of complexity of design or size. This assurance of casting soundness permits them to design with confidence.

CONTROL CHARTS



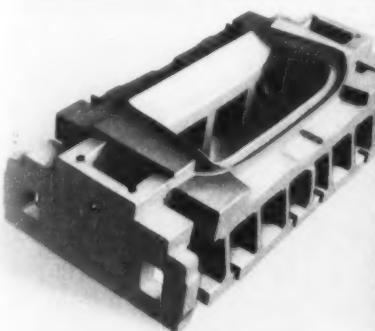
2. FOUNDRY CONTROL

The reliability of castings is measured not by the maximum tensile strength value a foundry can supply in a single casting, but by how consistent the strength values are maintained. Meehanite foundry technique assures delivery of castings that have uniform high strength properties from one to a thousand. This control is vital to the engineer.



3. ENGINEERING PROPERTIES

There are 26 types of Meehanite metal. Each has a distinctive combination of properties which include high elasticity, strength and toughness, excellent impact strength, good damping capacity and superior wear resistance. This makes it easy for the engineer to select the type best suited to his conditions of service.



4. DIMENSIONAL STABILITY

Meehanite metal has found wide favor with design engineers because it exhibits an unusually high degree of dimensional stability in the "as cast" and also in the hardened condition. The ability to cast to close tolerances provides engineers with greater freedom in design and contributes directly to reductions in weight and machining costs.



5. LOW MACHINING COSTS

Engineers striving to cut costs as well as metal, turn to Meehanite®. The uniform structure of Meehanite® permits high speeds and feeds to be used with safety. Freedom from white edges and hard spots increases tool life. Meehanite metal shows a higher strength to machinability ratio than steels or unalloyed irons of equal strength and takes a high polish.



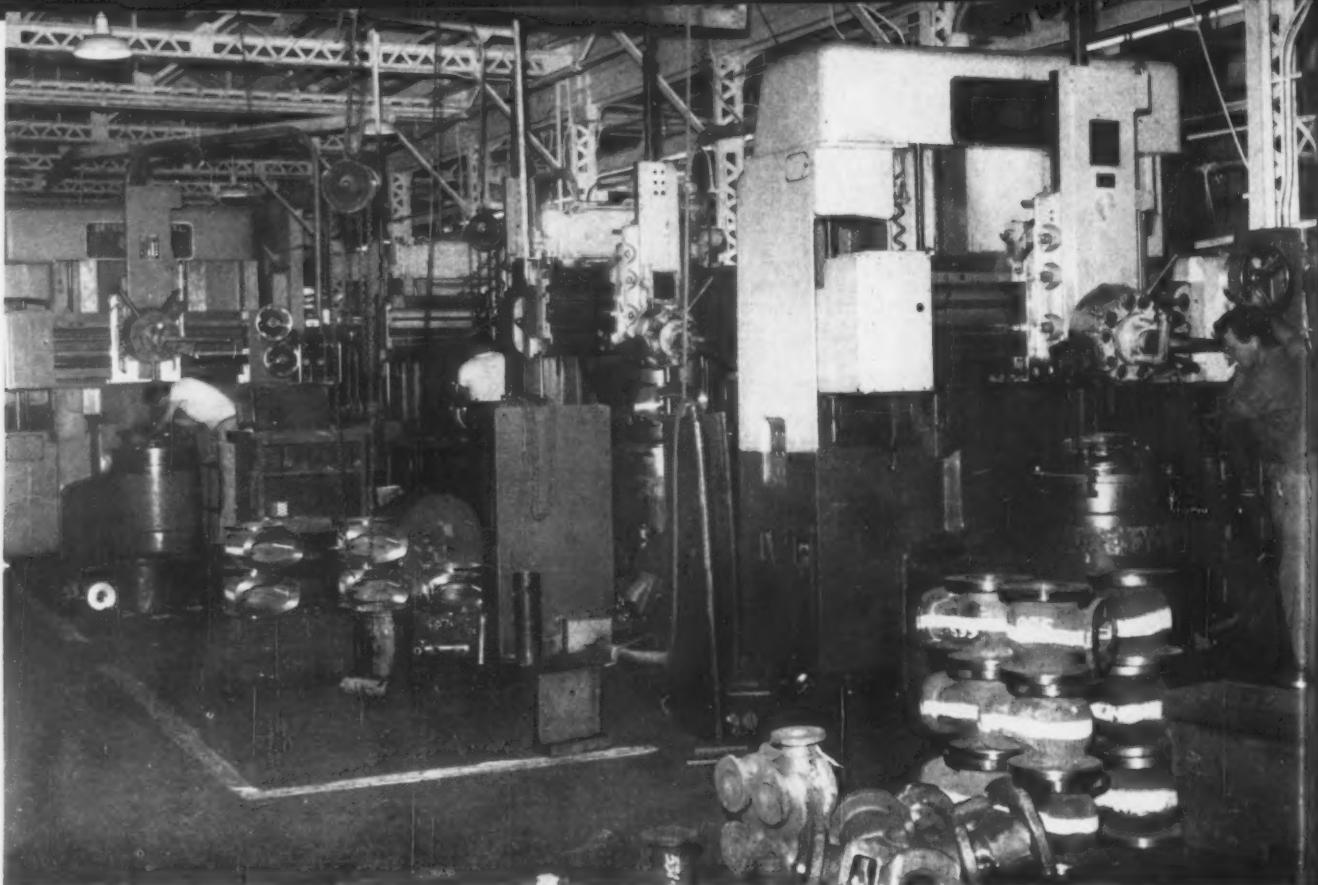
6. OUTSTANDING PERFORMANCE

Meehanite metal is saving Industry thousands of dollars each year in reducing the final cost of the component and increasing service life. A typical example is illustrated. In this application Meehanite metal Tooth Caps for heavy-duty land clearing rakes provide long wear life without failure under severe impact conditions.

MEEHANITE BRIDGES THE GAP BETWEEN CAST IRON AND STEEL®

MEEHANITE METAL

MEEHANITE METAL CORPORATION, NEW ROCHELLE, NEW YORK



"they're *GOOD* machines"

A veteran of 39 years with the Newport News
Shipbuilding and Drydock Company, Mr. L. G. Webb,
Foreman, further said "a large volume of valve bodies, hubs or levers
for hydraulic turbines and various other parts to be machined

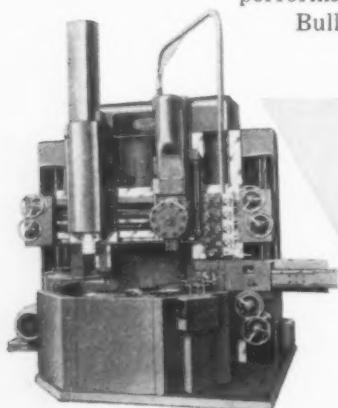
are handled most efficiently on our Bullard Model 75

Vertical Turret Lathes." Replacing Bullard V.T.L.'s
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THE BULLARD COMPANY
BRIDGEPORT 9, CONNECTICUT

FREE LITERATURE

pages cover: welding torches and tips, cutting torches and tips, regulators and accessories. (Harris Caloric Co.)

For free copy circle No. 9 on postcard, p. 85

Boring Machines

Way-type precision boring machines appear in a bulletin. Of the building block design, these units accept larger workpieces than standard precision borers. (Ex-Cell-O Corp.)

For free copy circle No. 10 on postcard, p. 85

Foil Aluminum

Two brochures are available on aluminum foil's use in labeling and packaging. One deals with laminating, coating and printing the material; the other, foil cartons. (Cochran Foil Corp.)

For free copy circle No. 11 on postcard, p. 85

Iron Castings

Gray and ductile iron castings offer many design advantages. An idea file lists just some of them. It contains 26 entries to an annual design competition. Each entry explains how iron castings solve a design problem, in many cases cutting cost. (Gray Iron Founders' Society, Inc.)

For free copy circle No. 12 on postcard, p. 85

Foundry Oxygen

How a controlled cupola chemistry process improves foundry work is explained in a booklet. Its 12 pages tell why oxygen permits cheaper, better melting. (National Cylinder Gas Div., Chemetron Corp.)

For free copy circle No. 13 on postcard, p. 85

Ductile Vanadium

High purity ductile vanadium metal is the subject of a brochure. Exceptional properties include: low neutron cross-section, high corrosion resistance, strength at high

heat, good thermal and electrical conductivity. A unique vanadium product is foil one mil thick. (Vanadium Corp. of America.)

For free copy circle No. 14 on postcard, p. 85

Milling Machine

Outstanding features of a mechanical-feed milling machine are presented in an 8-page folder. This is an extremely flexible machine. (Sundstrand Machine Tool Co.)

For free copy circle No. 15 on postcard, p. 85

Air Handling

Portable pneumatic equipment for rapid, safe, efficient conveying is shown in a 4-page bulletin. Equipment covered is rugged, versatile. (U. S. Hoffman Machinery Corp.)

For free copy circle No. 16 on postcard, p. 85

Slide Rules

There are slide rules—and slide rules—and slide rules, points out a 24-page selection guide. It offers help in picking one to fit your needs. (Keuffel & Esser Co.)

For free copy circle No. 17 on postcard, p. 85

Steel Stairs

Adjustable steel stairs are described in a 4-page folder. These stairs come completely assembled, adjusting to practically any height required. (New Jersey Steel Joist Corp.)

For free copy circle No. 18 on postcard, p. 85

Metal Coating

Rolling mills often apply a heavy silicate coat to plate and structural to prevent corrosion during temporary storage. This and other uses of sodium silicates are featured in a company publication. (Philadelphia Quartz Co.)

For free copy circle No. 19 on postcard, p. 85

Materials Handlers

Comprehensive discussion of abilities of large crawler tractors is included in a 12-page booklet. (Caterpillar Tractor Co.)

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GREATER MILEAGE

Malleabrasive goes for "greater mileage"—retains its grade particle size longer, has longer cleaning life, because of its own exclusive metallurgical structure—present in no other metal abrasive.

Its tough, shatter-resistant structure makes it go for greater mileage and provides its slow breakdown rate and consequent minimum "fines". Fewer fines mean faster cleaning, less destructive action on machine parts, and lower over-all cleaning costs.

You should know the full story about **Malleabrasive** and what it can do for you.

Write us.



THE GLOBE STEEL ABRASIVE CO.
Mansfield, Ohio

Sold by Poughkeepsie Corp., Hagerstown, Md.,
and by many leading distributors of foundry supplies from coast to coast.

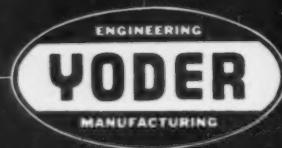
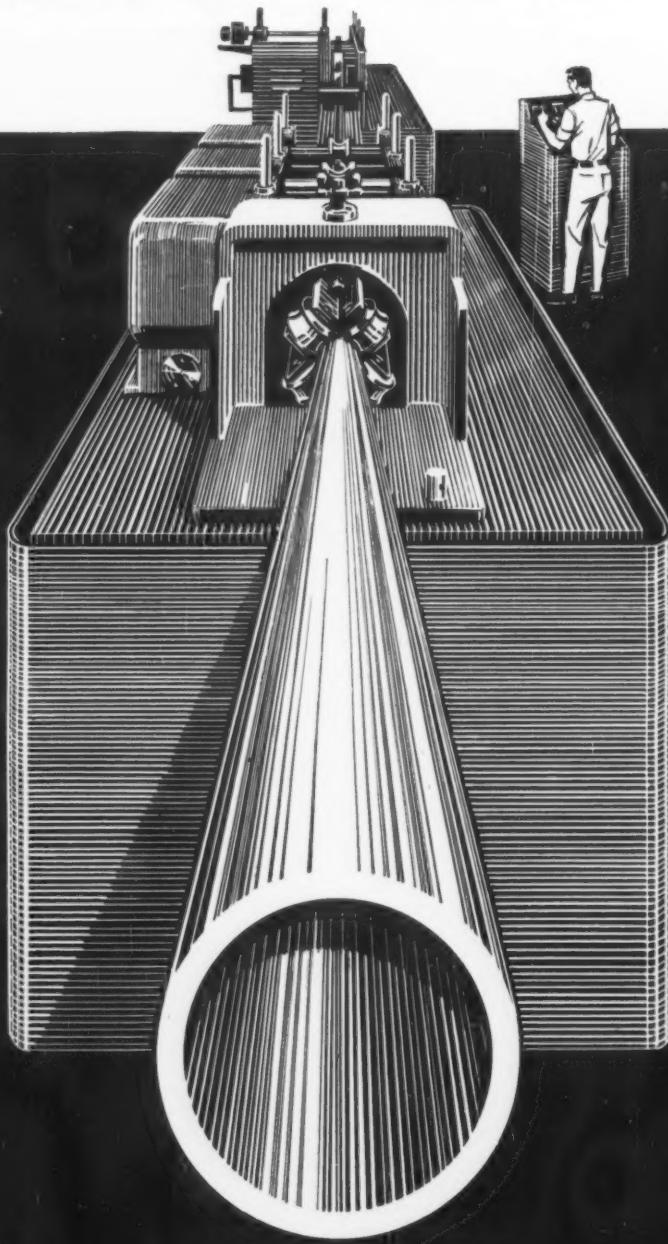
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ROTARY SLITTING LINES**

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Gearshift Drive

An 8-page technical bulletin deals with a gearshift drive. (Lima Electric Motor Co., Inc.)

For free copy circle No. 21 on postcard

Crane Wheels

Carbon-graphite current collector wheels for electric cranes are presented in a data sheet. These wheels eliminate need for bearings, lengthen life of trolley wires, banish dead spots, reduce pitting, arching and burning. (U. S. Graphite Co.)

For free copy circle No. 22 on postcard

Pressure Vessels

A step-by-step guide eliminates need for lengthy computations in design of pressure vessels. The handbook contains tables giving head capacity and shell capacity per linear inch for various tank sizes, ranging from 48-in. ID. to 131 $\frac{1}{4}$ -in. ID. (American Car and Foundry Div., ACF Industries, Inc.)

For free copy circle No. 23 on postcard

Nuclear Fuels

Nuclear fuels are the key to reactor performance, says a 24-page booklet. Reactor design and components, fuels (solid and liquid), and typical reactors are covered in detail. (Sylvania - Corning Nuclear Corp.)

For free copy circle No. 24 on postcard

Electric Steels

Electric furnace steels are detailed in a 48-page catalog. Melting, rolling, finishing, thermal treating, and conditioning capacities are cov-

ered. Step by step, it pictures output from furnace charging to finished stock. (Copperweld Steel Co., Aristoy Steel Div.)

For free copy circle No. 25 on postcard

Oil Products

An oil company's line of products is reviewed in a booklet. Products include: lubricants, greases, cutting and quenching fluids, and other metalworking oils. (Sun Oil Co.)

For free copy circle No. 26 on postcard

Bonding Adhesives

Adhesives for bonding insulation and insulating sealers are presented in a 4-page bulletin. Adhesives and sealers serve heating, ventilating, building, automotive, truck, trailer and railroad applications. (Minnesota Mining & Mfg. Co.)

For free copy circle No. 27 on postcard

Presses

Flywheel and back-geared inclinable presses from 16 to 150 tons are mentioned in a catalog. It also covers: Single and double crank straight side presses from 40 to 250 tons, gap presses from 60 to 200 tons and horn presses in 35 and 60 ton sizes. (Johnson Machine & Press Corp.)

For free copy circle No. 28 on postcard

Research, Development

A 16-page brochure describes a firm's integrated research and development activities. These include welding, nuclear, chemical, metallurgical and missile jobs. (ALCO Products, Inc.)

For free copy circle No. 29 on postcard

Tinplate Inspector

A new automatic inspection data accumulator for tinplate lines is detailed in an 8-page bulletin. At 3600 fpm, it helps rollers control high product quality. (General Electric Co., Computer Dept.)

For free copy circle No. 30 on postcard

Barrel Finishing

Precision barrel finishing media and compounds are offered in a 4-page folder. It lists and describes

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 1/8/59

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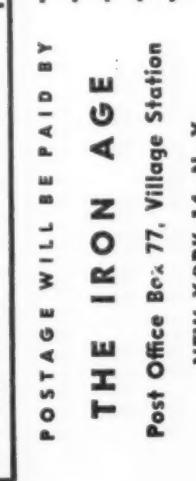
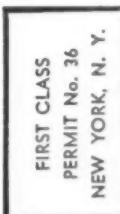
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FREE LITERATURE

shapes and types available, and names of prominent users. (Speed-D-Burr Corp.)

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a complete range of gearmotor types and sizes. Gear reducers run from 1 to 75 hp, 350 to 7½ rpm. (Lima Electric Motor Co., Inc.)

For free copy circle No. 37 on postcard

Printed Circuit Holes

Drilling holes in printed circuit boards can be done cheaply, simply with a new setup. Holes are clean, dies unnecessary. Quick-change drilling setups make many holes at once. A 6-page folder gives details. (Zagar, Inc.)

For free copy circle No. 38 on postcard

Automation

Digimatic, an automatic control system for table positioning, is graphically presented in a new mailing piece. This unit speeds drilling, spot welding, riveting, engraving, tapping, countersinking, template plotting and other operations. (Stromberg-Carlson.)

For free copy circle No. 39 on postcard

Digital Recorder

Outlined in a folder is a digital recording system that comes complete and ready to use. For use in place of log sheets, strip charts, and hand methods, this system automatically records data at unattended stations at precise intervals. Key feature is low initial cost. (Datex Corp.)

For free copy circle No. 40 on postcard

Malleable Castings

A 72-page handbook introduces pearlitic malleable castings. It's a ready reference to late data from many sources. Included are advantages of castings in general. It aims at designers and producers of metal products. (Malleable Research & Development Foundation.)

For free copy circle No. 41 on postcard

Precision Borer

For heavy-duty, high production service, a new precision boring machine is outlined in a 4-page bulletin. The borer handles precision high production and heavy-duty jobs. (Olofsson Corp.)

For free copy circle No. 42 on postcard

Indexing Turret

"The machine that uses its head" is described in a 6-page folder. It deals with a power indexing turret with pre-selective spindle speeds and pre-selective depth control. (Burg Tool Mfg. Co.)

For free copy circle No. 32 on postcard

Welding Machinery

Welding machinery for automatic welding is covered in a 4-page bulletin. It covers: (1) multi-purpose machines and positioners; (2) automatic chucking; (3) automatic travel; (4) automatic ejection. (Airline Welding Sales Inc.)

For free copy circle No. 33 on postcard

Automated Tools

A system for the automatic control of machine tools is outlined in a booklet. Using magnetic tape programming, it doesn't require computer programming. It records right off the machine tool. (Micro-Path Inc.)

For free copy circle No. 34 on postcard

Batteries

Use and design of low capacity, light duty, lead-antimony grid batteries are examined in a bulletin. Batteries serve control, switchgear, auxiliary power and other stationary jobs. (C & D Batteries, Inc.)

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Punch Presses

Safe 15-ton punch presses are outlined in a data sheet. It describes the press as "the safest you can buy." (Kenco Mfg. Co.)

For free copy circle No. 36 on postcard

Gear Reducers

Double and triple reduction gear reducers, and gearmotors, are featured in a data sheet. It offers

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PLEASE TYPE OR PRINT

Name

Title

Company

Co. Address

City Zone State

New Materials and Components

Attachment Converts Lathe To Automatic Tracer

Self contained, this hydraulic attachment converts any lathe for tracer work. It turns the lathe into a machine for automatic multiple diameter shaft turning and for facing, turning and boring contoured work. Made in three sizes to fit lathes up to 27½-in. actual swing and up to 30 hp, it adapts to any standard lathe. It also fits most makes of turret and automatic lathes. It's equally useful on production work, short runs, or one-of-a-kind maintenance and tool work.

Compact in design, there are no hoses, pipes or external connections to introduce air, cause leaks or create energy losses. There are no large tanks to radiate heat. It mounts in place of the standard lathe compound slide, swiveling to any desired angle. It adapts equally to either internal or external work. Round or flat shapes of wood or metal, or a standard workpiece, can serve as templates. (Leland-Gifford Co.)

For more data circle No. 52 on postcard, p. 85



Featherweight Nut Takes Up To 1200°F Heat

Exceptionally light in weight, a high-strength locknut withstands up to 1200°F temperatures. Minimum tensile strength is 200,000 psi at room temperature and more than 150,000 psi at 1200°F. Available in four diameter sizes, including No. 10-32 through ¾-24, they're recommended for structural uses on jet engines, missiles, aircraft and related equipment. They mount

close to corners and perpendicular bulkheads and generally permit smaller bolt circles in flange applications; this means additional weight savings. Bolt weight also can be reduced, due to low height of the locknut. Temperature tests show a stress rupture life in excess of 23 hours at 1200°F at a 100,000-psi stress. It may be used repeatedly. (Standard Pressed Steel Co.)

For more data circle No. 53 on postcard, p. 85

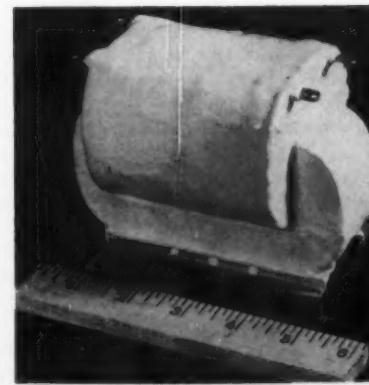


Resin Protects Against Moisture and Flames

For treating electronic, electrical and other components, a new silicone modified filled encapsulating resin gives extensive protection. The resin, known as Fosterite SFR BT-3199, provides these components with high moisture resistance and flame retardance. Transformers encapsulated with the new resin have passed severe humidity and flammability tests (Military Specifi-

cations MIL-T-27A), giving considerable flexibility, with resultant savings in weight, space and most costs. Its developer recommends it for treatment of items such as filament, power and plate transformers for communications, fire control, radar and guided missiles, (Micarta Div., Westinghouse Electric Corp.)

For more data circle No. 54 on postcard, p. 85



METALLURGICAL SERVICE

SOUTHERN BASIC

SOUTHERN FOUNDRY

NORTHERN BASIC

NORTHERN FOUNDRY

NORTHERN BESSEMER

NORTHERN MALLEABLE

CHATEAUGAY

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First, as the only producer of both Northern and Southern Irons, Republic offers you the only complete line of all grades of merchant pig iron available in the industry. Northern grades include Malleable, Bessemer, Foundry, and Basic—plus Chateaugay, Republic's exclusive Low Phosphorus Pig Iron. Southern furnaces produce Foundry and Basic Irons.

Then, to assist you in selection, application, processing, and use, Republic provides expert metallurgical service. The Republic Pig Iron Metallurgists are both foundrymen and skilled technicians. They have a solid industry background gained from years of actual foundry experience. They know all types of irons and their characteristics. And, they talk a language you can understand—your language.

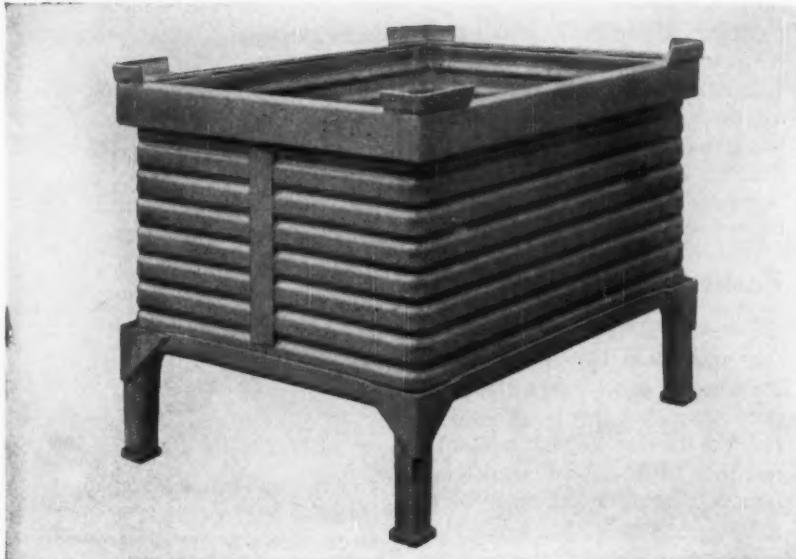
Republic Pig Iron Metallurgists have at their fingertips information on the latest processes and techniques

available for improving castings, and expanding their use and sale.

Frequently, these men are called upon to make routine foundry surveys. Their recommendations and suggestions often result in improved operations, increased production efficiency, and output at lower unit cost. Even a seemingly minor change in operation or procedure has resulted in recapturing business lost to other methods of fabrication.

And, because Republic produces industry's most complete line of merchant pig iron, the metallurgists are able to recommend the proper grade for your specific job without hesitation or prejudice.

Seven grades of pig iron, plus prompt, expert metallurgical service add up to eight good reasons for relying upon Republic for all of your requirements. Mail the coupon for more information on Republic's complete line of irons, or for metallurgical service.



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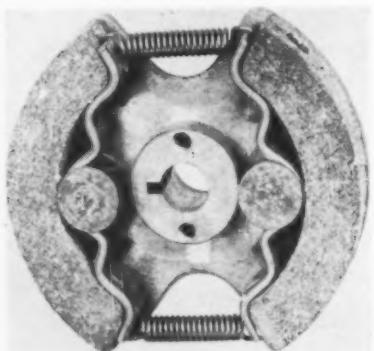
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DESIGN DIGEST

Centrifugal Clutch

This cam-type centrifugal clutch can disengage at approximately the same speed with which it engages, with or without load. A moderate camming or locking-in action permits this. Designed to function in applications that have high operating speeds or medium pulsating loads, it affords quick release where

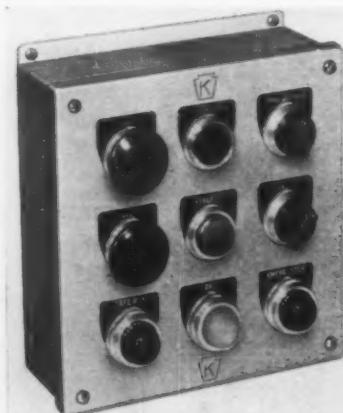


necessary. It's recommended for electric motors or gasoline engines where gradual engagement is required or in operations starting from high inertia. In many cases it allows use of much smaller motors. It comes in 1 to 30 lb ft capacities; rpm from 1200 to 3600; 4 1/4-in. OD, 7/16 to 1-in. diam bore. (Fairbanks, Morse & Co.)

For more data circle No. 55 on postcard, p. 85

Pushbutton Enclosure

Liquid tight, dustproof construction of this pushbutton enclosure



keeps all foreign elements out. Such units are for use where dirt, dust and liquids are a problem. En-

closures take all standard oiltight pushbuttons, switches or pilot lights. Available in ten standard sizes for 1, 2, 3, 4, 6, 9, 16, 20 and 25 control units, they come with or without knockouts or holes. Of 14-gage steel, all boxes have welded seams. (Keystone Mfg. Co.)

For more data circle No. 56 on postcard, p. 85

Pushbutton Switch

For critical space requirements, this pushbutton switch fits control and console panels or pendant stations needing splash protection. Heart of the assembly is a subminiature unit with double break contacts. It rates at 10-amp, 125/250-v ac or 30-v dc. Mechanical life is more than 20,000,000 actuations. The switch maintains a snap action



"feel." The button mechanism is sealed with oil and coolant resistant neoprene. There are four standard terminal styles, including solder, screw and AMP taper tab for quick connection. (Licon Switch & Control Div., Illinois Tool Works).

For more data circle No. 57 on postcard, p. 85

Quick-release Pins

Quick-release pins in a new design can serve both shear-load and tensional-load applications. They feature a recessed release button to prevent accidental unlocking. An internal rod provides a positive lock for the balls; it unlocks only when the button in the head is intentionally depressed during installation or removal. Locking rod is activated by

silicone, instead of a metal spring, to be vibration proof as well as cor-



rosion and temperature resistant. (Waldick Engineering Co.)

For more data circle No. 58 on postcard, p. 85

Cotter

Fifteen sizes of external, or "hairpin," cotter have been standardized as stock items by one supplier. The cotters fit rod sizes in standard



increments from 0.125 to 0.750-in. diam. Of SAE-1095 steel, they have a cadmium plate finish. (Hunter Spring Co.)

For more data circle No. 59 on postcard, p. 85

Mill, Drill Tables

Combination slide and rotary drilling and milling tables have rugged cast iron and steel construction throughout. Easy-to-read fingertip control dials are calibrated in thousandths of an inch. Tables rotate 360°. Two feed motions are provided at right angles. These tables give fast, accurate production in precision work on drill presses, millers and lathes. (Mastercraft Engineering Co.)

For more data circle No. 60 on postcard, p. 85

New Production Ideas

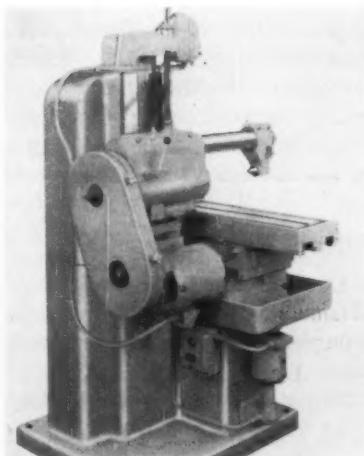
Equipment, Methods and Services

Rugged Miller Handles Medium Production Work

Ruggedly built, this bed type milling machine rapidly handles light and medium production work. Available in three arrangements to suit special needs, each model has: lever feed for rise and fall of lever head; micrometer cross adjustment of saddle; extra-large (3-in. diam) adjustable overarm and heavy arbor support; counterbalanced milling head; 1-hp geared head motor and six spindle speeds in two ranges (111 to 1105 rpm or 247 to 2463 rpm); push-pull selector switch and starter. Optional is a 1½-hp motor

instead of 1 hp. Unusually wide tables aid mounting of large fixtures. Long ways provide great spindle rigidity. Emphasis in the design is on oversize, extra-heavy components throughout, including heavy-duty saddle and steel base. One model handles small lot production work. A second unit has hydraulic feed for longer production runs. A third accommodates low production and toolroom work. Standard attachments are available. (The Producto Machine Co.)

For more data circle No. 43 on postcard, p. 85

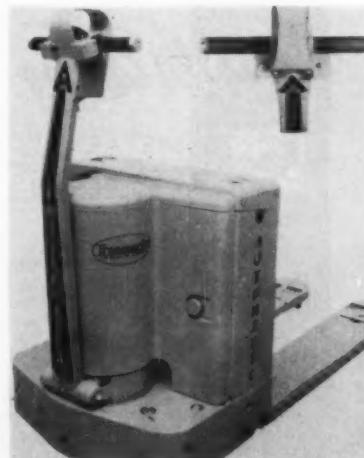


Separate Controls Brake Industrial Trucks

Separate controls provide dynamic braking on one firm's new line of operator-led industrial trucks. Dynamic braking allows fast, safe operation on ramps or other inclines and in very narrow aisles. The separate control permits dynamic braking only as needed. It's conveniently located for fingertip control with either hand. The brakes can adjust to conform to individual job conditions. In no way do they interfere with the standard braking system. Dynamic braking is decel-

eration resulting from dissipation of electrical energy produced by the truck's travel inertia. This energy is produced by the truck's traction motor functioning as a generator, the driving force being the motion of the truck. Energy so made dissipates in the form of heat by a resistor. Rate of deceleration is governed by the resistance in series with the field. Decreasing resistance allows rapid deceleration. (Automatic Transportation Co.)

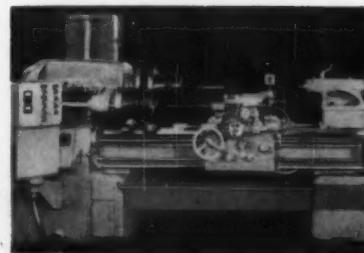
For more data circle No. 44 on postcard, p. 85



Profile Tracer Lathe Bores Bottle Molds

Boring bottle molds having non-circular cross section is done rapidly by and accurately on a new rotary profile tracer lathe. The machine accommodates most bottle mold work. It readily switches to conventional turning, boring and threading oper-

ation when desired. Key feature is its super-sensitive electro-hydraulic tracer. The head of this is built into a bar that is adjustably mounted at the front of the cross slide. Stylus deflection pressure is only 1½ oz. At a feed of 100 ipm, accuracy of



NEW EQUIPMENT

duplication of the tracer slide is ± 0.001 in. (Monarch Machine Tool Co.)

For more data circle No. 45 on postcard, p. 85

Boiler Cleaning

A shot cleaning system now available cleans heating surfaces such as tubular airheaters, horizontal superheaters, reheaters and economizers. Cleaning is done by cascading steel shot uniformly over the heating surface. Shot is recovered and reused indefinitely. It automatically recirculates through a pneumatic system. (Diamond Power Specialty Corp.)

For more data circle No. 46 on postcard, p. 85

Filler Rod

Low-fuming gas filler rod is now obtainable for welding high strength bronzes and brasses. Containing manganese bronze alloyed with nickel, it has high tensile strength,

good ductility and toughness. Rods meet AWS - ASTM classification R-Cu Zn-B and Federal specification QQ-R-571a, class FS-R Cu Zn-3. (Ampco Metal, Inc.)

For more data circle No. 47 on postcard, p. 85

Tap Follower

Precision built and spring loaded, this tap follower is designed to speed production and reduce tap breakage and imperfect threads. It's tightened in the drill chuck. Spring tension is placed on the tap. This leaves



both hands free to easily and accurately turn the tap wrench handle. Of 4140 steel, the tool fits all standard $\frac{1}{2}$ -in. drill chucks. It adapts to drill press, lathe and vertical mill tapping. (Rigitap Corp.)

For more data circle No. 48 on postcard, p. 85

Torque Wrench

Improperly tightened fasteners due to errors in setting or reading torque wrenches are eliminated when using a preset snap torque wrench. This wrench employs a readily replaceable standard socket key. It's preset to user specifications by the manufacturer, then sealed and clearly marked. (Skidmore Engineering Co.)

For more data circle No. 49 on postcard, p. 85

Hydraulic Shears

Hydraulically - operated squaring shears have now joined a firm's lines of motor-driven, air-powered and foot-powered shears. Adjustments of the hydraulic units can be made in a minute or less. Metals, plastics and composition sheets can be cut. Variable speed of the ram is accomplished by turning a small knob to open or close a flow control valve. Length of cut can be varied by a

limit switch for full length shearing or for notching. Holdown pressure can be varied by simply opening or closing a valve. Slope of the top blade can be varied from zero to

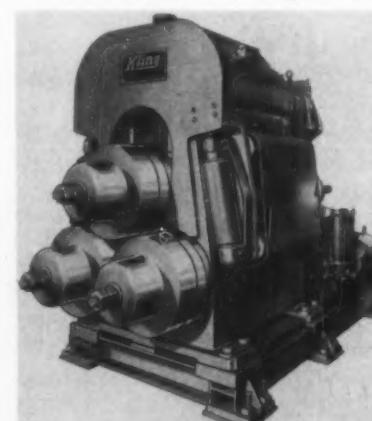


$\frac{3}{8}$ -in. per foot; push button control enables the operator to raise the holdown for easy access to top blade bolts. (Wysong & Miles Co.)

For more data circle No. 50 on postcard, p. 85

Angle Roll Bender

This pyramid type, angle roll bending machine comes in horizontal and vertical models. The vertical bender is offered in four sizes. It bends light, medium and heavy sections of angles. It takes only a small amount of floor space. The horizontal bender is designed for



extremely heavy structural sections for rolling to large diameters. It avoids need for extremely high head room. The two styles are designed with heavy-duty capacity well within the design safety factor. (Kling Brothers Engineering Works.)

For more data circle No. 51 on postcard, p. 85

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The Iron Age Summary

Steel Market Is Strengthening

Straws-in-the-wind are multiplying. Plates are on allocation basis in Midwest mill.

Mills warn customers that hand-to-mouth buying will be risky business from here on in.

■ The steel market is tightening up. There are quite a few straws in the wind this week. Here are some of them:

(1) A Midwestern mill already is doling out plates on an allocation basis. Another plate mill in the same area is pushing the limit of practical capacity and is getting ready to set new order-to-delivery schedules. One buyer who tried to place January tonnage three weeks ago had his order bounced into February and March. The strength of the market is spreading to Pittsburgh and the East.

Mills Sound Warning—(2) Some mills are warning their customers that hand-to-mouth buying will be

risky business from here on out. They are advising them to order farther ahead or run the chance of being caught short on critical products. Some steel users already have had some narrow escapes.

(3) Hot-rolled bar demand is picking up. So is the market for oil country drill pipe and casing, and linepipe. Demand for sheet and strip, galvanized sheets, and terne plate is showing steady improvement. Tinplate shipments will more than double in January over a relatively slow December.

Hedge Buying to Come—(4) Current market strength is based on moderate inventory building and higher output levels in users' plants. Yet to come is the expected avalanche of orders as a hedge against a possible steel strike at mid-year.

Steel service centers are gradually building their inventories, but not excessively. Some have boosted cold-rolled sheet orders for the first quarter as much as 15 pct above fourth quarter levels.

More mills are now talking in terms of near-capacity operations at some time in the first half of the year. But it's doubtful there will be an overnight spurt in operations.

A Gradual Buildup—The buildup of steel production will be gradual. The reason for this is that the mills hesitate to start up additional furnaces until they have orders in hand. They're going to be sure they need the added output before committing themselves to it.

Despite the gathering strength of the steel market, quite a few steel users are holding back in the placing of orders above their normal requirements. One steel sales vice president commented: "They've been in the driver's seat so long they find it difficult to adjust."

Behind Plate Surge—Part of the strength of the plate market is due to a buildup in linepipe orders. Some of this large-diameter pipe is fabricated from plate. In the Midwest, linepipe bookings are still gaining. Tank fabricators also are revising their plate orders upward.

Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week	Last Week	Month Ago	Year Ago
Ingot Index (1947-1949=100)	133.1	127.8	123.6	94.3
Operating Rates				
Chicago	87.0	87.0*	85.0	60.0
Pittsburgh	71.5	74.0*	70.0	52.5
Philadelphia	73.0	74.0*	73.0	71.0
Valley	70.5	69.0*	53.5	48.0
West	82.0	76.0*	84.0	71.0
Cleveland	84.0	80.0*	69.5	52.0
Buffalo	66.0	66.0	66.0	51.0
Detroit	98.0	94.0*	93.0	63.0
South	71.0	72.0	65.0	62.5
South Ohio River	81.5	83.0*	79.0	61.0
Upper Ohio River	86.0	84.5*	86.5	58.0
St. Louis	94.0	97.0*	77.0	79.0
Aggregate	75.5	76.0	73.5	56.1

*Revised

Prices At a Glance

	This Week	Week Ago	Month Ago	Year Ago
(Cents per lb unless otherwise noted)				
Composite price				
Finished Steel, base	6.196	6.196	6.196	5.967
Pig Iron (gross ton)	\$66.41	\$66.41	\$66.41	\$66.42
Scrap No. 1 hvy (Gross ton)	\$40.17	\$39.83	\$39.83	\$33.00
No. 2 bundles	\$29.33	\$29.00	\$28.17	\$24.67
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	28.10
Copper, electrolytic	29.00	29.00	29.00	27.00
Lead, St. Louis	12.80	12.80	12.80	12.80
Magnesium	35.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	98.25	98.75*	99.375	93.00
Zinc, E. St. Louis	11.50	11.50	11.50	10.00

Motors Will Stay Buyers Market

Stable prices and good deliveries are expected in the motor market during next six months.

Buyers will remain in the driver's seat as competitive selling goes on.

■ Buyers of electric motors can look for stable prices and prompt delivery for at least the next six months.

Strong competition is expected to extend the buyers market through that period. Sales of integral horsepower motors picked up in the last quarter of 1958. Inquiries on heavy motors (over 500 hp) are running at a high rate.

Better Than '58, But—But in neither case is there expected to be enough of an improvement to

tighten supply, extend deliveries, or take pressure off prices. One maker of integral horsepower motors expects 1959 to be a better year than 1958, but not up to the level of 1957.

In this situation present service conditions will probably continue. Despite the fourth quarter sales spurt in integral motors, buyers of these models appear more firmly in the saddle than ever. They are asking for and getting two week delivery on motors calling for special design. Normally this kind of order would take at least a month to fill.

Motor makers have reduced their own finished inventories but are still able to meet rush demands. They are doing this by tightening up production cycles. Use of computers for design work has also speeded service.

Price Prospects—Prices of integral horsepower motors held fairly even in 1958. There were no general increases. Pricing was competitive but not cut-throat. The big change was the introduction of firm pricing policies.

Prior to last year integral horsepower motors were sold on the basis of price in effect at time of shipment. In 1958 motor companies began taking orders on the basis of firm prices for six months and a 10 pct limit on escalation for 12 months. Outlook is for this policy to continue through 1958.

Design Trends—Rerating programs for integral horsepower motors are largely completed but manufacturers doubt that designs will stand still.

"We will continue to pack more horsepower into smaller frames," says one. He looks for another general rerating program within the next five years. The trend toward higher average horsepower is also expected to continue.

Heavy Motor Outlook—Makers of heavy motors find less grounds for cheer. Negotiations are going on at a "terrific rate" but industry is still holding back on big projects.

Under these conditions delivery is no problem. Large ac and dc motors are available in four to twelve months, which is "sooner than anyone wants them."

Despite the market lag, there has been no great price weakness in large motors. A general increase of 2-3 pct was put through last September. Manufacturers hope to keep prices in line with costs in the next 12 months. During 1958 a new policy established firm prices for 12 months with escalation after that.



BUYERS MARKET: Motor sales have improved but market still favors customer during first half of '59. (Westinghouse Electric Corp. photo).



WORLD'S LARGEST

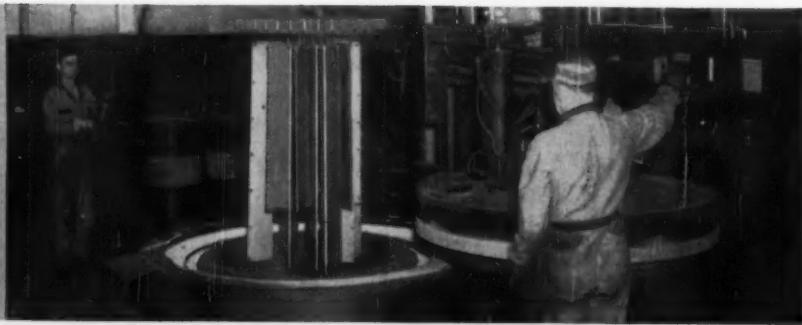
Gas-Fired Homocarb® Furnace Installed

"This equipment took a sizable bite out of our limited expansion capital," says Carl H. Muehlemeyer, President of O. T. Muehlemeyer Heat Treating Company, commercial heat treaters in Rockford, Ill., "but we chose it deliberately after much consideration because we know that with it, we can give our customers the quality and service they require at a competitive cost."

Muehlemeyer points out that, "This furnace is part of a quality-control expansion program extending over the next several years. It reached us from Leeds & Northrup ready for installation with complete instrumentation for Speedomax temperature control and Microcarb atmosphere control."

Only recently has a complete line of gas-fired Homocarb furnaces, equivalent in design, construction and instrumentation to electrically-fired units been introduced. Combining precision control of carbon potential with the economy of gas-firing, these furnaces can be used interchangeably for case carburizing, carbon restoration, homogeneous carburizing or hardening. These factors strongly influenced Muehlemeyer's choice.

A load of SAE 4140 steel slidebars being unloaded from Muehlemeyer's gas-fired furnace. Carbon and temperature control panels can be seen at right. Above is the same furnace . . . measuring 15 feet high by 6½ feet in diameter . . . ready to leave the L&N skipping dock in Philadelphia.



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Plate Sales Upsurge Is Brewing

Midwest sales strength of plate moves eastward.

Threat of a mid-year steel strike will bring users into market soon, mills predict.

■ The plate market is shaking off its lethargy.

In the Midwest, previously the only active plate market, one mill is now allocating plates. Another, pushed to the limit of producing capacity, is set to extend delivery times.

Plate sales are not moving at the same feverish pace along the East Coast and at Pittsburgh. Most mills there can still make delivery in three or four weeks. Some are even filling orders for Midwest buyers and taking pressure off that area.

But plate sellers in all markets are optimistic. "We are not accepting any tonnages beyond March until we see where we stand," says an East Coast sales manager. "With customers out to build stocks in case of a steel strike, this may be a three-quarter year. Most of the buying could be in the 1st, 2nd, and 4th quarters. The second quarter, especially, will be hectic."

Another sales official points out that linepipe orders and plate fabricating will also aid in reviving sales. Talking about inventory building by users, he says, "The big order push hasn't come yet. But plate could tighten quickly without too much warning."

Sheet and Strip—Mills are warning customers, especially automotive sheet buyers, that deliveries are about ready to stretch out. Users

are told spot orders will be harder to fill from here on. Despite this, customers are still not doing any great amount of advance ordering. According to **Pittsburgh** mills, much of the sheet tonnage expected for February has not yet been ordered. March bookings are also slow.

In contrast, **Chicago** sheet users are busy building inventories. They are now booking steel for second quarter delivery. Cold-rolled sheet mills in the area are on 21 turns a week (full capacity). Hot-rolled sheet mills are operating at 18-20 turns a week. Strip mills are still on an 18-turn level, but also booking second quarter tonnages.

Galvanized, aluminized, and other coated sheet products are still sold out months in advance in all markets.

Structurals—Sales are not showing much life, even in the otherwise booming **Chicago** market. Mills there say that, despite some gains, structurals are the slowest product. **Pittsburgh** mills report heavy railroad steel buying has yet to ma-

terialize. Until it does standard structurals won't be in strong demand. Even strike-hedge buying is not expected to help wide flange beams to any large degree. The reason: There's usually less stockpiling in wide flanged beams than in other products.

Bars—Hot-rolled bar deliveries are lengthening slightly in the **Pittsburgh** area. Mills there say January orders for hot-rolled should be better than for any month in 1958. Some buyers are doing more advance ordering. In the **Chicago** area, some steel service centers are building stocks of both hot-rolled and cold finished bar. Cold finished bar output in that district went up about 20 pct in November. December gains were almost as large. And January will show further gains.

Stainless—January sales of most stainless products will top any month in 1958, mills predict. Stainless plate orders are especially improved, reflecting the pickup in industrial construction. However, sharp sales competition still exists among jobbers.

Two more stainless mills—Universal-Cyclops Steel Corp. and Joslyn Mfg. & Supply Co.—have joined Crucible Steel in raising the price of billets, bars and wire about 3½ pct.

Wire Products — **Farwest** steel mills are facing stiffer competition from foreign producers of merchant wire products. The toughest sales battles involve nails, wire fencing, and netting.

Steel Service Centers — Some distributors are increasing inventories against an expected second quarter rush from buyers. Cold-rolled sheet is one of the products they are ordering from the mills.

Farwest warehouses are facing a different situation. "We expect a lot of foot-dragging on inventory buildup through March," says the general manager of one West Coast outlet. "Nobody wants to get stuck with a heavy stock load at the March 1, Los Angeles County inventory tax date."

PURCHASING AGENT'S CHECKLIST

Interest in industrial leasing is growing among metalworking companies. **P. 27**

New European markets offer great opportunities for U. S. firms, expert claims. **P. 39**

Detective work on sources of scrap and salvage may help in cutting costs. **P. 72**

COMPARISON OF PRICES

(Effective Jan. 6, 1959)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Jan. 6 1959	Dec. 29 1958	Dec. 9 1958	Jan. 7 1958
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	4.92¢
Cold-rolled sheets	6.275	6.275	6.275	6.05
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.60
Hot-rolled strip	5.10	5.10	5.10	4.92¢
Cold-rolled strip	7.425	7.425	7.425	7.17
Plate	5.30	5.30	5.30	5.12
Plates, wrought iron	13.55	13.55	13.55	13.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00

Tin and Ternplate: (per base box)

Tinplate (1.50 lb.) cokes	\$10.65	\$10.65	\$10.65	\$10.30
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.00
Special coated mfg. ternes	9.90	9.90	9.90	9.55

Bars and Shapes: (per pound)

Merchant bar	5.675¢	5.675¢	5.675¢	5.425¢
Cold finished bar	7.65	7.65	7.65	7.30
Alloy bars	6.725	6.725	6.725	6.475
Structural shapes	5.50	5.50	5.50	5.275
Stainless bars (No. 302)	45.00	45.00	45.00	45.00
Wrought iron bars	14.90	14.90	14.90	14.45

Wire: (per pound)

Bright wire	8.00¢	8.00¢	8.00¢	7.65¢
Rails:	(per 100 lb.)			
Heavy rails	85.75	85.75	85.75	\$5.525

Light rails	6.725	6.725	6.725	6.50
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Semifinished Steel: (per net ton)

Rerolling billets	\$80.00	\$80.00	\$80.00	\$77.50
Slabs, rerolling	80.00	80.00	80.00	77.50
Forging billets	99.50	99.50	99.50	96.00
Alloy blooms, billets, slabs	119.00	119.00	119.00	114.00

Wire Rods and Skelp: (per pound)

Wire rods	6.40¢	6.40¢	6.40¢	6.15¢
Skelp	5.05	5.05	5.05	4.875

Finished Steel Composite: (per pound)

Base price	6.196¢	6.196¢	6.196¢	5.967¢
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Finished Steel Composite

Weighed index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

Pig Iron: (per gross ton)

	Jan. 6 1959	Dec. 29 1958	Dec. 9 1958	Jan. 7 1958
Foundry, del'd Phila.	\$70.57	\$70.57	\$70.57	\$70.51
Foundry, Southern Cin'ti	73.87	73.87	73.87	71.65
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07	70.01
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese, 74-76 pct Mn, cents per lb†	12.25	12.25	12.25	12.25

Pig Iron Composite: (per gross ton)

Pig iron	\$66.41	\$66.41	\$66.41	\$66.42
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Scrap: (per gross ton)

No. 1 steel, Pittsburgh	\$43.50	\$42.50	\$42.50	\$32.50
No. 1 steel, Phila. area	34.50	33.50	33.50	35.50
No. 1 steel, Chicago	42.50	43.50	43.50	30.50
No. 1 bundles, Detroit	36.50	35.50	35.50	21.50
Low phos., Youngstown	45.50	44.50	44.50	34.50
No. 1 mach'y cast, Pittsburgh	50.50	50.50	50.50	49.50
No. 1 mach'y cast, Phila.	48.50	48.50	58.50	50.50
No. 1 mach'y cast, Chicago	53.50	53.50	53.50	44.50

Steel Scrap Composites: (per gross ton)

No. 1 hvy. melting scrap	40.17	\$39.83	\$39.83	\$33.00
No. 2 bundles	29.33	29.00	28.17	24.67

Coke, Connellsville: (per net ton at oven)

Furnace coke, prompt	\$14.50	\$14.50	\$14.50	\$15.38
Foundry coke, prompt	\$18-18.50	\$18-18.50	\$18-18.50	\$17.50-19

Nonferrous Metals: (cents per pound to large buyers)

Copper, electrolytic, Conn.	29.00	29.00	29.00	27.00
Copper, Lake, Conn.	29.00	29.00	29.00	27.00
Tin, Straits, N. Y.	98.25	98.75	99.375	93.00
Zinc, East St. Louis	11.50	11.50	11.50	10.00
Lead, St. Louis	12.80	12.80	12.80	12.80
Aluminum, virgin ingot	26.80	26.80	26.80	28.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	33.00

† Tentative. ‡ Average. * Revised.

Steel Scrap Composites

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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Prices Firming As Upturn Begins

It looks as if the long-awaited upturn in the scrap market has finally started.

In most districts, scrap is moving—and at higher prices. Export shows signs of life.

■ Signs of strength were showing through as the scrap market entered the New Year. A pattern of steady but unspectacular rise predicted for the economy in general during the next six months apparently has already begun in the scrap industry.

Most of the strength is in the Midwest, where mill operating rates are keeping pace with increased activity in automotive, appliance, and construction equipment industries.

While eastern mills continued to be negative factors in local dealer markets, high prices in the Midwest were attractive enough to draw as many as a hundred truckloads of scrap a day from the East. It puts a floor under openhearth scrap prices in that region and may cause eastern mills to raise their buying prices soon.

Severe winter weather is taking a toll on scrap collections in many districts, further strengthening dealer prices.

Increases in Pittsburgh and Philadelphia edged up The IRON AGE No. 1 heavy melting Composite Price to \$40.17, a rise of 34¢.

Pittsburgh—Price of No. 1 heavy melting is up \$1. Prices of secondary openhearth grades are unchanged. The price rise came after local factory bundles were sold for \$1 to \$2 over last month and a mill on the

fringe of the district boosted its price for No. 1 by \$1.50 over last month. The market here is stronger but there is still not enough mill buying to produce a steep price climb. No. 2 bundles are still readily available at existing price level.

Chicago—Following a purchase of factory bundles direct by a major consumer, factory bundle prices slipped. At the same time, additional purchases of heavy melting grades forced the price off \$1. Brokers report difficulty in covering orders at the lower prices, and dealer resistance is strong. Another siege of heavy weather has had the effect of firming all other grades.

Philadelphia—Openhearth scrap prices are stronger due to out-of-district activity. Many truckloads of material are leaving this area for points West. A local mill may soon enter the market for openhearth scrap, and it is expected to pay a dollar or two above last week's quoted price to offset out-of-district offerings. Other grades are inactive. One broker has begun filling an export order for February shipment.

New York — Prices are unchanged, although brokers and mills are stepping up inspection. Top prices are going only to better material. Both dealers and brokers are confident of a pickup in demand for all grades.

Detroit — Cold, icy weather and the holidays have slowed collection of scrap here. However, a moderate price rise for industrial scrap, a similar increase for dealer scrap on mill purchases, and New Year opti-

mism combine to push the market up about \$1 on some grades.

Cleveland—Signs of dealer scrap drying up appeared as Valley market went up \$2 based on new purchases. The market is still slow. A local foundry is allowing a \$2 springboard to get enough tonnage on 2 ft foundry steel, indicating a shortage in dealer yards.

St. Louis—The collecting and processing of scrap in the area last week was slowed somewhat by severe cold weather. Some sales of rails, 18 in. and under, were made at \$53, up \$1. But most trading was done in stove plate at \$45, up \$1, re-rolling rails at \$59, off \$1, and unstripped motor blocks which sold at unchanged prices.

Birmingham — Except for small purchases of cast grades, there was no activity in the scrap market during the Christmas-New Year holidays. Openhearth consumers are not expected to return to the market for a few weeks but one large electric furnace indicated it will buy next week at lower prices. The export market is dead.

Cincinnati—One area mill raised prices \$2 on openhearth scrap it will purchase during this month. A second mill raised its prices \$1, but is not anxious to build inventory. Up-river mills might soon meet these prices. Foundry market continues slow.

Buffalo—The market became active here after a long period of quiet. Primary grades are up \$2 on basis of small sales. No. 2 heavy melting also is up \$2. Turnings prices are unchanged after a sale to a Niagara Falls mill.

West Coast — Demand is brisk enough to absorb the scrap being generated. There is talk that mills might step up their buying soon.

Houston — The market is quiet. While little scrap is moving domestically, the export outlook is improving. One ship left here for Japan and brokers are hopeful of more cargoes. There are signs of life in the Mexican market.

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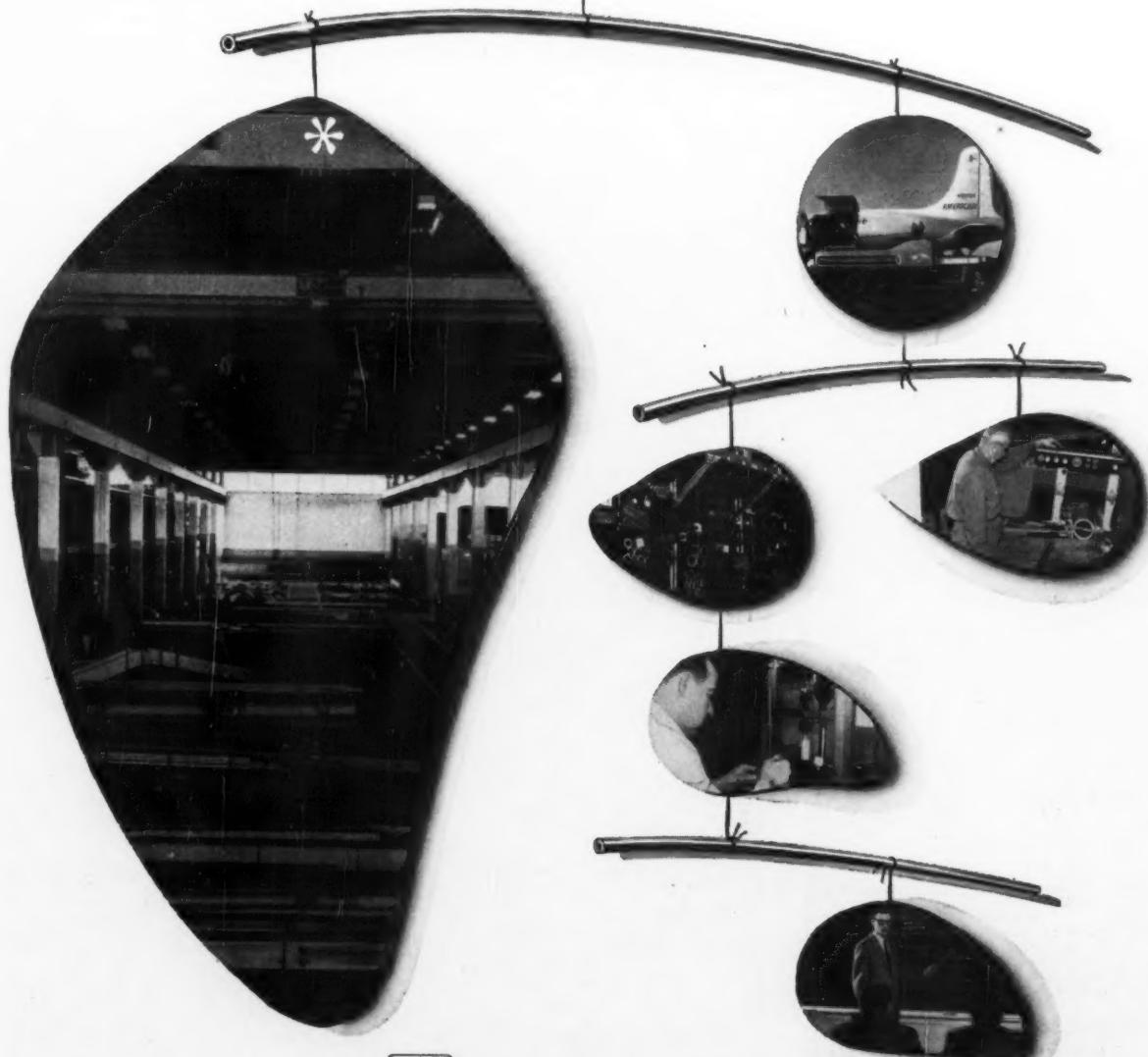
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SCRAP PRICES (Effective Jan. 6, 1959)

Pittsburgh

No. 1 hvy. melting	\$43.00 to \$44.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 dealer bundles	43.00 to 44.00
No. 1 factory bundles	48.00 to 49.00
No. 2 bundles	31.00 to 32.00
No. 1 busheling	43.00 to 44.00
Machining turnings	21.00 to 22.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	25.00 to 26.00
Low phos. punch'gs plate	48.00 to 49.00
Heavy turnings	36.00 to 37.00
No. 1 RR hvy. melting	46.00 to 47.00
Scrap rails, random lgth.	54.00 to 55.00
Rails 2 ft and under	57.00 to 58.00
RR specialties	48.00 to 49.00
No. 1 machinery cast	50.00 to 51.00
Cupola cast	44.00 to 45.00
Heavy breakable cast	42.00 to 43.00
Stainless	
18-8 bundles and solids	225.00 to 230.00
18-8 turnings	125.00 to 130.00
430 bundles and solids	125.00 to 130.00
410 turnings	50.00 to 60.00

Chicago

No. 1 hvy. melting	\$42.00 to \$43.00
No. 2 hvy. melting	36.00 to 38.00
No. 1 dealer bundles	43.00 to 44.00
No. 1 factory bundles	46.00 to 47.00
No. 2 bundles	31.00 to 32.00
No. 1 busheling	42.00 to 43.00
Machining turn	22.00 to 23.00
Mixed bor. and turn.	24.00 to 25.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	23.00 to 24.00
Low phos. forge crops	52.00 to 53.00
Low phos. punch'gs plate	48.00 to 49.00
Low phos. 3 ft & under	46.00 to 47.00
No. 1 RR hvy. melting	46.00 to 47.00
Scrap rails, random lgth.	52.00 to 53.00
Rerolling rails	63.00 to 64.00
Rails 2 ft and under	59.00 to 60.00
Angles and splice bars	54.00 to 55.00
RR steel car axles	71.00 to 72.00
RR couplers and knuckles	51.00 to 52.00
No. 1 machinery cast	53.00 to 54.00
Cupola cast	47.00 to 48.00
Heavy breakable cast	41.00 to 42.00
Cast iron wheels	42.00 to 43.00
Malleable	56.00 to 57.00
Stove plate	44.00 to 45.00
Steel car wheels	52.00 to 53.00
Stainless	
18-8 bundles and solids	215.00 to 220.00
18-8 turnings	125.00 to 130.00
430 bundles and solids	115.00 to 120.00
430 turnings	60.00 to 65.00

Philadelphia Area

No. 1 hvy. melting	\$34.00 to \$35.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	35.00 to 36.00
No. 2 bundles	24.50 to 25.50
No. 1 busheling	34.00 to 35.00
Machining turn	17.00 to 19.00
Mixed bor. short turn.	18.00 to 20.00
Cast iron borings	18.00 to 20.00
Shoveling turnings	20.00 to 22.00
Clean cast. chem. borings	32.00 to 33.00
Low phos. 5 ft and under	39.00 to 40.00
Low phos. 2 ft. punch'gs	38.00 to 39.00
Elec. furnace bundles	37.00 to 38.00
Heavy turnings	29.00 to 30.00
RR specialties	43.00 to 44.00
Cupola cast	38.00 to 39.00
Heavy breakable cast	40.00 to 41.00
Cast iron car wheels	44.00 to 45.00
Malleable	61.00 to 62.00
No. 1 machinery cast	48.00 to 49.00

Cincinnati

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$38.00 to \$39.00
No. 2 hvy. melting	33.00 to 34.00
No. 1 dealer bundles	38.00 to 39.00
No. 2 bundles	24.00 to 25.00
Machining turn	18.00 to 19.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	18.00 to 19.00
Low phos. 18 in. and under	47.00 to 48.00
Rails, random length	49.00 to 50.00
Rails, 18 in. and under	55.00 to 56.00
No. 1 cupola cast	44.00 to 45.00
Hvy. breakable cast	39.00 to 40.00
Drop broken cast	47.00 to 48.00

Youngstown

No. 1 hvy. melting	\$43.00 to \$44.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	43.00 to 44.00
No. 2 bundles	30.00 to 31.00
Machining turn	19.50 to 20.50
Shoveling turnings	19.50 to 20.50
Low phos. plate	45.00 to 46.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting	\$39.50 to \$40.50
No. 2 hvy. melting	31.50 to 32.50
No. 1 dealer bundles	39.50 to 40.50
No. 1 factory bundles	44.00 to 45.00
No. 2 bundles	26.50 to 27.50
No. 1 busheling	39.50 to 40.50
Machining turn	15.50 to 16.50
Mixed bor. and turn.	20.50 to 21.50
Shoveling turnings	20.50 to 21.50
Cast iron borings	20.50 to 21.50
Cut structural & plates, 2 ft & under	47.00 to 48.00
Drop forge flashings	39.50 to 40.50
Low phos. punch'gs plate	40.50 to 41.50
Foundry steel, 2 ft & under	40.00 to 41.00
No. 1 RR hvy. melting	45.00 to 46.00
Rails 2 ft and under	56.00 to 57.00
Rails 18 in. and under	57.00 to 58.00
Steel axle turnings	25.00 to 26.00
Railroad cast	50.00 to 51.00
No. 1 machinery cast	49.00 to 50.00
Stove plate	45.00 to 46.00
Malleable	61.00 to 62.00
Stainless	
18-8 bundles and solids	215.00 to 220.00
18-8 turnings	115.00 to 120.00
430 bundles and solids	120.00 to 125.00

Buffalo

No. 1 hvy. melting	\$36.00 to \$37.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 busheling	36.00 to 37.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	25.00 to 26.00
Machining turn	15.00 to 16.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	15.00 to 16.00
Low phos. plate	39.00 to 40.00
Structural and plate, 2 ft & under	44.00 to 45.00
Scrap rails, random lgth.	46.00 to 47.00
Rails 2 ft and under	56.00 to 57.00
No. 1 machinery cast	48.00 to 49.00
No. 1 cupola cast	44.00 to 45.00

St. Louis

No. 1 hvy. melting	\$37.00 to \$38.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	28.00 to 29.00
Machining turn	18.00 to 19.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	22.00 to 23.00
No. 1 RR hvy. melting	43.00 to 44.00
Rails, random lengths	47.00 to 48.00
Rails, 18 in. and under	52.00 to 53.00
Angles and splice bars	46.00 to 47.00
RR specialties	46.00 to 47.00
Cupola cast	48.00 to 49.00
Heavy breakable cast	38.00 to 39.00
Cast iron brake shoes	38.00 to 39.00
Stove plate	44.00 to 45.00
Cast iron car wheels	44.00 to 45.00
Rerolling rails	58.00 to 59.00
Unstripped motor blocks	39.00 to 40.00

Birmingham

No. 1 hvy. melting	\$35.00 to \$36.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	35.00 to 36.00
No. 2 bundles	21.00 to 22.00
No. 1 busheling	35.00 to 36.00
Machining turn	21.00 to 22.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	13.00 to 14.00
Electric furnace bundles	37.00 to 38.00
No. 1 cupola cast	44.00 to 45.00
Hvy. breakable cast	39.00 to 40.00
Drop broken cast	47.00 to 48.00
No. 1 RR hvy. melting	44.00 to 45.00
Rails, 18 in. and under	49.00 to 50.00
Angles and splice bars	45.00 to 46.00
Rerolling rails	54.00 to 55.00
No. 1 cupola cast	52.00 to 53.00
Stove plate	53.00 to 54.00
Cast iron car wheels	41.00 to 42.00
Unstripped motor blocks	40.00 to 41.00

New York

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$26.00 to \$27.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 dealer bundles	18.00 to 19.00
Machining shop turnings	10.00 to 11.00
Mixed bor. and turn.	13.00 to 14.00
Shoveling turnings	14.00 to 15.00
Clean chem. cast. borings	23.00 to 25.00
No. 1 machinery cast	37.00 to 38.00
Mixed yard cast	33.00 to 34.00
Heavy breakable cast	32.00 to 33.00
Stainless	
18-8 prepared solids	185.00 to 190.00
18-8 turnings	80.00 to 85.00
430 prepared solids	65.00 to 70.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$34.00 to \$35.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	34.00 to 35.00
Machining turn	13.00 to 14.00
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	15.00 to 16.00
No. 1 cupola cast	33.00 to 34.00
Stainless	
18-8 bundles and solids	205.00 to 210.00
18-8 turnings	100.00 to 105.00
430 bundles and solids	105.00 to 110.00

Boston

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$24.00 to \$25.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 dealer bundles	24.00 to 25.00
No. 2 bundles	13.00 to 14.00
No. 1 busheling	24.00 to 25.00
Machining turn	8.00 to 9.00
Shoveling turnings	10.00 to 11.00
Cast iron borings	17.00 to 19.00
No. 1 machinery cast	31.00 to 32.00
Mixed cupola cast	31.00 to 32.00
Heavy breakable cast	29.00 to 30.00
No. 1 cupola cast	29.00 to 30.00
Stainless	
No. 1 hvy. melting	\$34.00
No. 2 hvy. melting	32.00
No. 1 dealer bundles	\$29.00 to 31.00
No. 2 bundles	22.00
Machining turn	15.00
Cast iron borings	45.00
No. 1 cupola cast	45.00

Los Angeles

No. 1 hvy. melting	\$37.00
No. 2 hvy. melting	35.00
No. 1 dealer bundles	\$33.00 to 34.00
No. 2 bundles	20.00
Machining turn	15.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Elec. furn. 1 ft and under (foundry)	48.00
No. 1 cupola cast	47.00

Seattle

No. 1 hvy. melting	\$30.00
No. 2 hvy. melting	28.00
No. 2 bundles	22.00
No. 1 cupola cast	36.00
Mixed yard cast	36.00

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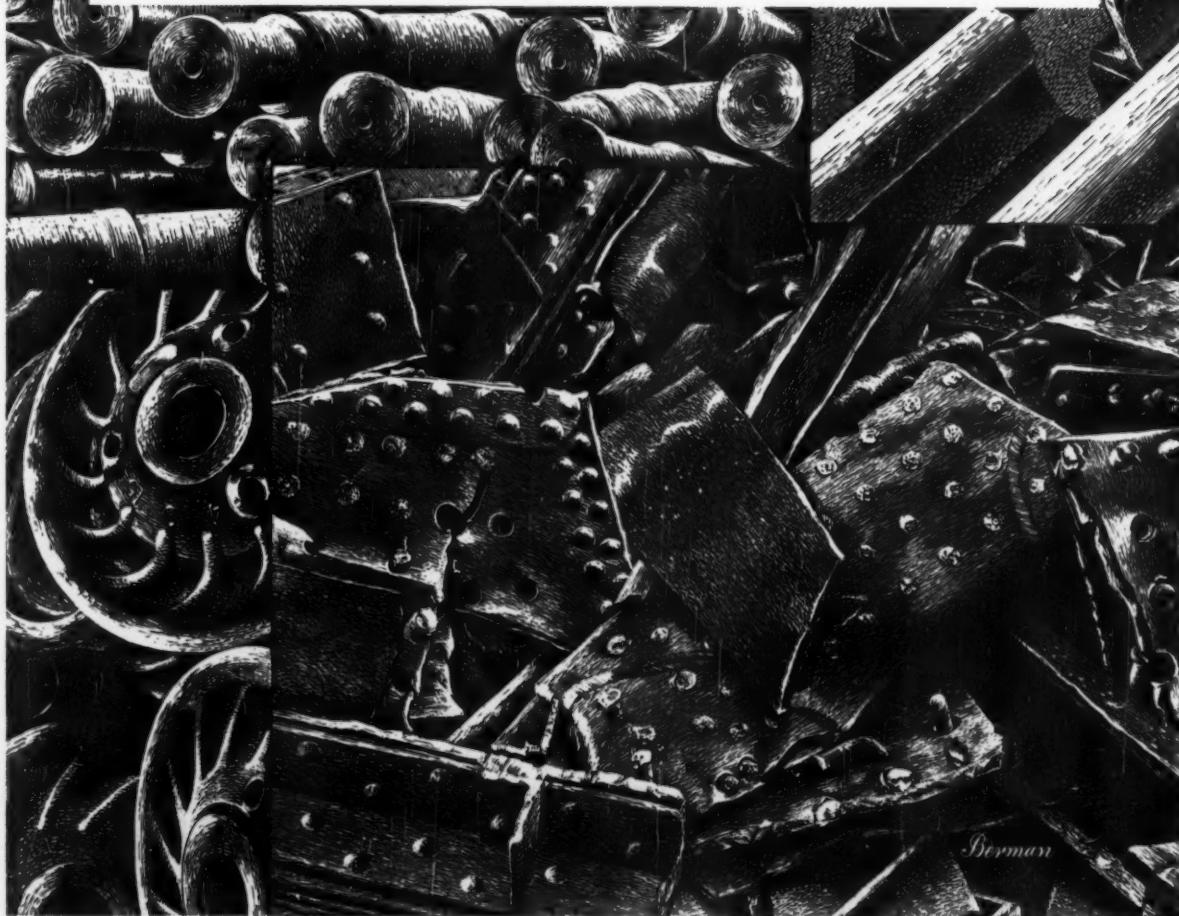
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NONFERROUS MARKETS

Russian Program Spells Trouble

Latest USSR Seven-Year plan portends tough competition in Free World nonferrous markets.

Most likely: Reds will compete more with mill shapes rather than primary metal.

The Russian Seven-Year Plan for Economic Development, from 1959 through 1965, may spell trouble for the Free World nonferrous industry. It probably means the most trouble for nonferrous fabricators.

Here's the picture:

Nikita Khrushchev's plan makes no bones about the aims of the USSR to expand its nonferrous output.

Output Increase—"As compared with 1958, the target figures provide for an increase of approximately 180 pct in the output of aluminum, a 90 pct increase in the case of refined copper, and a substantial increase in the output of nickel, magnesium, titanium, germanium and silicon. The output of other nonferrous metals and especially rare metals, will also increase."

In presenting the picture for the economic development of various areas of the USSR, nonferrous figures prominently. For instance, in referring to one specific Soviet Republic, he says: "In the nonferrous metal industry existing enterprises will be enlarged and big new enterprises will be built."

Under the heading of "Basic Tasks in the Development of the National Economy," the head Rus-

sian assigns "special attention" to "considerably expanding the nonferrous metal industry in Kazakhstan, Central Asia, the Urals and the Trans-Baikal area on the basis of the rich raw material resources."

Other Factors—But the breakneck speed at which the Reds intend to exploit their nonferrous potential is not alone a threat to Free World markets. All through the document several other factors are evident.

Initially, Russia intends to do more trading in the Free World. Section VI treats the "International Significance" of the plan. One statement: "The realization of the Seven-Year Plan will be a highly important stage in the peaceful economic competition of the two systems—the socialist and capitalist systems."

Fabricating Equipment—Also, the biggest goal of the program is developing fabricating facilities. Many times Mr. Khrushchev emphasizes the importance of machinery and heavy industry. "In 1958 output of the means of production will be more than five times as great as in 1940," the report states.

In terms of 1958, Soviet output in 1965 of rolling mill equipment will be up 100 to 120 pct, forge and pressing machines up 50 pct, technological equipment for foundry production up 100 to 130 pct, and metal cutting machine tools up 40 to 100 pct.

Observers pretty well agree on the situation. The Russians will have increasing stocks of nonfer-

rous metals to trade, for whatever purpose, in the Free World. But they will also have the facilities to work these metals, so the greatest area of competition will be in mill shapes and semi-finished products.

Aluminum

Round 3 in the battle over control of the British Aluminum Co.: A group of London bankers and businessmen are bidding for about half of the outstanding stock. This would not scotch the deal to sell the unissued stock to Alcoa, but would cut out Reynolds Metals and its British partner, Tube Investments, Ltd., who also want the outstanding stock.

Tin prices: Dec. 24—99.125; Dec. 29—98.75; Dec. 30—98.50; Dec. 31—98.25; Jan. 2—98.00; Jan. 5—98.25; Jan. 6—98.25.*

*Estimate.

Monthly Average Metal Prices

(Cents per lb except as noted)

Average prices of the major nonferrous metals in December based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, del'd	
Conn. Valley	29.00
Copper, Lake	29.00
Straits Tin, New York	98.994
Zinc, E. St. Louis	11.50
Lead, St. Louis	12.80
Aluminum ingot	26.80

Note: Quotations are on going prices

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum Ingot	26.00	26.10	8/1/58
Copper (E)	29.00	27.50	10/23/58
Copper (CS)	29.00	29.50	11/26/58
Copper (L)	29.00	27.50	10/23/58
Lead, St. L.	12.80	12.30	10/14/58
Lead, N. Y.	13.00	12.50	10/14/58
Magnesium Ingot	36.00	34.00	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	64.50	12/6/58
Titanium sponge	182-182	185-205	11/3/58
Zinc, E. St. L.	11.50	11.00	11/7/58
Zinc, N. Y.	12.00	11.00	11/7/58

ALUMINUM: 99% Ingot frt alwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. **MAGNESIUM:** 99.8% pig Velasco, Tex. **NICKEL:** Port Colbourne, Canada. **ZINC:** prime western. **Tin:** See above; Other primary prices, pg. 103.

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136	.250
1100, 3003.....	45.7	48.8	42.8	43.3
5052.....	53.1	48.4	46.0	46.0
6061-0.....	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8.....	42.7-44.2	51.1-54.8
12-14.....	42.7-44.2	52.0-56.5
24-26.....	43.2-44.7	62.8-67.5
36-38.....	46.7-49.2	88.9-90.5

Screw Machine Stock—2011-T-3

Size"	3/4	5/16-3/8	3/4-1	1 1/4-1 1/2
Price.....	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"	72	96	120	144
.010 gage.....	\$1.411	\$1.884	\$2.353	\$2.833
.024 gage.....	1.762	2.340	2.937	3.524

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type→	Gage→	250	250-	.188	.081	.032
AZ31B Stand,						
Grade.....		67.9	69.0	77.9	108.1	
AZ31B Spec.....		93.3	95.7	108.7	171.8	
Tread Plate.....		70.6	71.7	.....	.....
Tooling Plate.....		73.0	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade.	69.6	70.7	75.6	89.2
Spec. Grade....(AZ31B)	84.0	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting)..... 37.25 (delivered)

AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velaco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

"A" Nickel Monel Inconel

Sheet, CR	126	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Shot, blocks	87	...	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	53.13	.....	50.38	53.33
Brass, Yellow	46.57	47.11	46.51	49.98
Brass, Low	49.23	49.77	49.17	53.54
Brass, R.L.	50.17	50.71	50.11	53.48
Brass, Naval	51.24	.....	45.05	54.68
Muntz Metal	49.35	.....	44.66	.....
Comm. Br.	51.65	52.10	51.59	54.71
Mang. Br.	54.94	.....	48.64	.....
Pb. on Br. 5%	72.52	.....	73.09	.....

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, \$6.90-\$7.40; alloy, \$14.35; Plate, HR, commercially pure, \$6.00-\$6.75; alloy, \$7.75-\$8.50. Wire, rolled and/or drawn, commercially pure, \$5.60-\$6.00; alloy, \$8.00-\$9.50; Bar, HR or forged, commercially pure, \$4.25-\$4.65; alloy, \$4.25-\$7.15; billets, HR, commercially pure, \$3.55-\$4.10; alloy, \$3.55-\$5.75.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex. 29.50
Beryllium aluminum 5% Be, Dollar per lb contained Be..... \$74.75
Beryllium copper, per lb cont'd Be. \$43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading..... \$71.50
Blasmat, ton lots..... 2.25
Cadmium, del'd..... 1.45
Calcium, 99.9% small lots..... 4.55
Chromium, 99.8% metallic basis..... 1.31
Cobalt, 97-99% (per lb)..... \$2.00 to \$2.07
Germanium, per gm, f.o.b. Miami, Okla., refined..... 35.00 to 42.00
Gold, U. S. Treas., per troy oz..... \$35.00
Indium, 99.9%, dollars per troy oz. \$2.25
Iridium, dollars per troy oz. \$70 to \$80
Lithium, 98%..... \$11.00 to \$14.00
Magnesium, sticks, 100 to 500 lb..... 59.00
Mercury, dollars per 76-lb flask, f.o.b. New York..... \$218 to \$221
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel..... 69.60
Palladium, dollars per troy oz. \$15 to \$17
Platinum, dollars per troy oz. \$50 to \$55
Rhodium,..... \$120.00 to \$125.00
Silver ingots, 6 per troy oz. 89.875
Thorium, per kg. 43.00
Vanadium..... \$3.45
Zirconium sponge..... \$ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5 Ingot	No. 115	.....	28.00
	No. 120	.....	27.00
	No. 123	.....	26.00
80-10-10 Ingot	No. 205	.....	32.25
	No. 315	.....	30.25
85-10-8 Ingot	No. 210	.....	39.75
	No. 215	.....	35.50
	No. 245	.....	32.25
Yellow Ingot	No. 405	.....	23.00
	No. 431	.....	24.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys	0.30 copper max.	0.40 copper max.	0.60 copper max.	0.80 copper max.
Piston alloys (No. 123 type)	24.25-24.75	24.50-24.75	24.50-25.25	24.50-25.25
No. 12 alum. (No. 2 grade)	21.50-22.00	22.00-22.50	22.00-22.50	22.00-22.50
108 alloy	25.00-26.00	25.00-26.00	25.00-26.00	25.00-26.00
195 alloy	24.25-24.75	24.25-24.75	24.25-24.75	24.25-24.75
13 alloy (0.60 copper max.)	24.25-24.75	24.25-24.75	24.25-24.75	24.25-24.75
AXS-679 (1 pct zinc)	21.75-22.25	21.75-22.25	21.75-22.25	21.75-22.25

(Effective Jan. 5, 1959)

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97 1/2%	22.50-23.50
Grade 2—92-95%	21.25-22.25
Grade 3—90-92%	20.25-21.25
Grade 4—85-90%	17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

Heavy Turnings

Copper	25	24 1/4
Yellow brass	15	17 1/4
Red brass	22 1/2	21 1/2
Comm. bronze	22 1/2	22 1/2
Mang. bronze	17 1/2	16 1/2
Free cutting rod ends	18 1/2	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

Heavy Turnings

No. 1 copper wire	24 1/2
No. 2 copper wire	23 1/2
Light copper	21
No. 1 composition	19
No. 1 comp. turnings	18 1/2
Hvy. yellow brass solids	14 1/2
Brass pipe	15 1/2
Radiators	15 1/2

Copper and Brass

No. 1 copper wire	21 1/2
No. 2 copper wire	20 1/2
Light copper	17 1/2
Auto radiators (unsweated)	13 1/2
No. 1 composition	16 1/2
No. 1 composition turnings	15 1/2
Cocks and faucets	13 1/2
Clean heavy yellow brass	11 1/2
Brass pipe	13 1/2
New soft brass clippings	14
No. 1 brass rod turnings	11 1/2

Aluminum

Alum. pistons and struts	6	6 1/2
Aluminum crankcases	10	10 1/2
1100 (2S) aluminum clippings	13	13 1/2
Old sheet and utensils	10	10 1/2
Borings and turnings	6 1/2	7
Industrial castings	10	10 1/2
2020 (24S) clippings	11 1/2	11 1/2

Zinc

New zinc clippings	4 1/2	5 1/2
Old zinc	3 1/2	3 1/2
Zinc routings	2 1/2	2 1/2
Old die cast scrap	2	2 1/2

Nickel and Monel

Pure nickel clippings	52-54
Clean nickel turnings	37-40
Nickel anodes	52-54
Nickel rod ends	52-54
New Monel clippings	30-32
Clean Monel turnings	28-30
Old sheet Monel	26-28
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	15

Lead

Soft scrap lead	8	8 1/4
Battery plates (dry)	2 1/2	3
Batteries, acid free	2 1/2	2 1/2

Miscellaneous

Block tin	75	76
No. 1 pewter	59	60
Auto b		

IRON AGE STEEL PRICES		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.													
		BILLETS, BLOOMS, SLABS			PIL- ING	SHAPES STRUCTURALS			STRIP						
Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled			
Bethlehem, Pa.		\$119.00 B3		5.55 B3	8.10 B3	5.55 B5									
Buffalo, N. Y.	\$80.00 R3, B3	\$99.50 R3, B3	\$119.00 R3, B3	6.50 B3	5.55 B3	8.10 B3	5.55 B3	5.10 B3, R3	7.425 S10, R7	7.575 B3					
Phila., Pa.									7.875 P15						
Harrison, N. J.															
Conshohocken, Pa.		\$104.50 A2	\$126.00 A2					5.15 A2		7.575 A2					15.55 C11
New Bedford, Mass.									7.875 R6						
Johnstown, Pa.	\$80.00 B3	\$99.50 B3	\$119.00 B3		5.55 B3	8.10 B3									
Boston, Mass.									7.975 T8						
New Haven, Conn.									7.875 D1						
Baltimore, Md.									7.425 T8						15.00 T8
Phoenixville, Pa.					5.55 P2		5.55 P2								
Sparrows Pt., Md.								5.10 B3		7.575 B3					
New Britain, Bridgeport, Wallingford, Conn.			\$119.00 N8						7.875 W1,S7						
Pawtucket, R. I.									7.975 N7, A5						15.00 N7 15.70 T8
Worcester, Mass.															
Alton, Ill.								5.30 L1							
Ashland, Ky.								5.10 A7		7.575 A7					
Canton-Massillon, Dover, Ohio		\$102.00 R3	\$119.00 R3, \$114.00 T5						7.425 G4		10.80 G4				
Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	\$80.00 U1, R3	\$99.50 U1, R3,W8	\$119.00 U1, R3,W8	6.50 U1	5.50 U1, W8,P13	8.05 U1, Y1,W8	5.50 U1	5.10 W8, N4,A1	7.525 A1,T8, M8	7.575 W8		8.40 W8, S9,I3	15.55 A1, S9,C4,T8		
Cleveland, Ohio									7.425 A5,J3		10.75 A5	8.40 J3			
Detroit, Mich.			\$119.00 R5					5.10 G3, M2	7.425 M2,S1, D1,P11	7.575 G3	10.80 SI				
Anderson, Ind.									7.425 G4						
Gary, Ind. Harbor, Indiana	\$80.00 U1	\$99.50 U1	\$119.00 U1, Y1		5.50 U1, J3	8.05 U1, J3	5.50 J3	5.10 U1, J3,Y1	7.425 Y1	7.575 U1, J3,Y1	10.80 Y1	8.40 U1, Y1			
Sterling, Ill.	\$80.00 N4				5.50 N4			5.20 N4							
Indianapolis, Ind.									7.575 RS						15.70 RS
Newport, Ky.								5.10 A9				8.40 A9			
Niles, Warren, Ohio Sharon, Pa.		\$99.50 S1, C10	\$119.00 C10,SI					5.10 R3, SI	7.425 R3, T4,SI	7.575 R3, SI	10.80 R3, SI	8.40 SI	15.55 SI		
Owensboro, Ky.	\$80.00 G5	\$99.50 G5	\$119.00 G5												
Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	\$80.00 U1, P6	\$99.50 U1, C11,P6	\$119.00 U1, C11,B7	6.50 U1	5.50 U1, J3	8.05 U1, J3	5.50 U1	5.10 P6	7.425 J3,B4 7.525 E3			8.40 S9	15.55 S9		
Weirton, Wheeling, Follansbee, W. Va.				6.50 U1, W3	5.50 W3		5.50 W3	5.10 W3	7.425 F3	7.575 W3	10.80 W3				
Youngstown, Ohio	\$80.00 R3	\$99.50 Y1	\$119.00 Y1			8.05 Y1		5.10 U	7.425 Y1,R5	7.575 U1, Y1	10.95 Y1	8.40 U1, Y1	15.55 RS, Y1		
Fontana, Cal.	\$90.50 K1	\$109.00 K1	\$140.00 K1		6.30 K1	8.85 K1	6.45 K1	5.825 K1	9.20 K1						
Geneva, Utah		\$99.50 C7			5.50 C7	8.05 C7									
Kansas City, Mo.					5.60 S2	8.15 S2						8.65 S2			
Los Angeles, Terrance, Cal.		\$109.00 B2	\$139.00 B2		6.20 C7, B2	8.75 B2		5.85 C7, B2	9.30 C1,R5			9.60 B2	17.75 J3		
Minnequa, Colo.					5.80 C6			6.20 C6	9.375 C6						
Portland, Ore.					6.25 O2										
San Francisco, Niles, Pittsburg, Cal.		\$109.00 B2			6.15 B2	8.70 B2		5.85 C7, B2							
Seattle, Wash.		\$113.00 B2			6.25 B2	8.00 B2		6.10 B2							
Atlanta, Ga.					5.70 A8			5.10 A8							
Fairfield, Ala. City, Birmingham, Ala.	\$80.00 T2	\$99.50 T2			5.50 T2 R3,C16	8.05 T2		5.10 T2, R3,C16		7.575 T2					
Houston, Lone Star, Texas		\$104.50 S2	\$124.00 S2		5.60 S2	8.15 S2						8.65 S2			

(Effective Jan. 5, 1959)

THE IRON AGE, January 8, 1959

IRON AGE		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.												
STEEL PRICES		SHEETS						WIRE ROD	TINPLATE †					
		Hot-rolled 18 ga. & hvyr.	Cold- rolled	Galvanized (Hot-dipped)	Enamel- ing	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* 1.25-lb. base box	Electro** 0.25-lb. base box	Holloware Enameling 29 ga.	
EAST	Buffalo, N. Y.	5.10 B3	6.275 B3				7.525 B3	9.275 B3		6.40 W6	† Special coated mig. terms deduct 50¢ from 1.25-lb. coke base box price. Can-making quality BLACKPLATE 55 to 128 lb. deduct \$2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. ** ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add \$1.00. Differential 1.00 lb./0.25 lb. add 65¢.			
	Claymont, Del.													
	Coatesville, Pa.													
	Conshohocken, Pa.	5.15 A2	6.325 A2				7.575 A2							
	Harrisburg, Pa.													
	Hartford, Conn.													
	Johnstown, Pa.									6.40 B3				
	Fairless, Pa.	5.15 U1	6.325 U1				7.575 U1	9.325 U1			\$10.50 U1	\$9.20 U1		
	New Haven, Conn.													
	Phoenixville, Pa.													
MIDDLE WEST	Sparrows Pt., Md.	5.10 B3	6.275 B3	6.875 B3			7.525 B3	9.275 B3	10.025 B3	6.50 B3	\$10.40 B3	\$91.0 B3		
	Worcester, Mass.									6.70 A5				
	Trenton, N. J.													
	Alton, Ill.									6.60 L1				
	Ashland, Ky.	5.10 A7		6.875 A7	6.775 A7		7.525 A7							
	Canton-Massillon, Dover, Ohio			6.875 R1, R3										
	Chicago, Joliet, Ill.	5.10 W8, A1					7.525 U1, W8			6.40 A5 R1,W8				
	Sterling, Ill.									6.50 N4, K2				
	Cleveland, Ohio	5.10 R3, J3	6.275 R3, J3	7.65 R3*	6.775 R3		7.525 R3, J3	9.275 R3, J3		6.40 A5				
	Detroit, Mich.	5.10 G3, M2	6.275 G3, M2				7.525 G3	9.275 G3						
WEST	Newport, Ky.	5.10 A1	6.275 A1											
	Gary, Ind. Harbor, Indiana	5.10 UI, I3,Y1	6.275 UI, I3,Y1	6.875 UI, I3	6.775 UI, I3,Y1	7.225 UI	7.525 UI, Y1,I3	9.275 UI, Y1		6.40 Y1	\$10.40 UI, Y1	\$9.10 I3, UI,Y1	7.85 UI, Y1	
	Granite City, Ill.	5.20 G2	6.375 G2	6.975 G2	6.875 G2							\$9.20 G2	7.95 G2	
	Kokomo, Ind.			6.975 C9						6.50 C9				
	Mansfield, Ohio	5.10 E2	6.275 E2			7.225 E2								
	Middletown, Ohio		6.275 A7	6.875 A7	6.775 A7	7.225 A7								
	Niles, Warren, Ohio Sharon, Pa.	5.10 R3, SI	6.275 R3	6.875 R3 7.65 R3*	6.775 SI	7.225 SI*, R3	7.525 R3, SI	9.275 R3,				\$9.10 R3		
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 UI, J3,P6	6.275 UI, J3,P6	6.875 UI, J3	6.775 UI	7.225 UI, J3	7.525 UI, J3	9.275 UI, J3	10.025 UI, J3	6.40 A5, J3,P6	\$10.40 W5, J3	\$9.10 UI, J3	7.85 UI, J3	
	Portsmouth, Ohio	5.10 P7	6.275 P7							6.40 P7				
	Winton, Wheeling, Fellowsbee, W. Va.	5.10 W3, W5	6.275 W3, F3,W5	6.875 W3, W5	6.750 W3*	7.225 W3, W5	7.525 W3	9.275 W3			\$10.40 W5, W3	\$9.10 W5, W3	7.85 W5	
SOUTH	Youngstown, Ohio	5.10 UI, Y1	6.275 Y1	7.50 J3*	6.775 Y1		7.525 Y1	9.275 Y1		6.40 Y1				
	Fontana, Cal.	5.825 K1	7.40 K1				8.25 K1	10.40 K1			\$11.05 K1	\$9.75 K1		
	Genoa, Utah	5.20 C7												
	Kansas City, Mo.									6.65 S2				
	Los Angeles, Torrance, Cal.									7.20 B2				
	Minneapolis, Colo.									6.65 C6				
SOUTH	San Francisco, Niles, Pittsburg, Cal.	5.80 C7	7.225 C7	7.625 C7						7.20 C7	\$11.05 C7	\$9.75 C7		
	Atlanta, Ga.													
	Fairfield, Ala. Alabama City, Ala.	5.10 T2, R3	6.275 T2, R3	6.875 T2, R3	6.775 T2					6.40 T2,R3	\$10.50 T2	\$9.20 T2		
	Houston, Texas									6.65 S2				

* Electrogalvanized sheets.

(Effective Jan. 5, 1959)

*7.425 at Sharon-Niles is 7.325

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

	BARS						PLATES			WIRE	
	Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.			6.725 B3	9.025 B3	8.30 B3					
	Buffalo, N. Y.	5.675 R3, B3	5.675 R3, B3	7.70 B5	6.725 B3, R3	9.025 B3, B5	8.30 B3	5.30 B3			8.00 W6
	Claymont, Del.							5.30 C4		7.50 C4	7.95 C4
	Coatesville, Pa.							5.30 L4		7.50 L4	7.95 L4
	Conshohocken, Pa.							5.30 A2		7.50 A2	7.95 A2
	Harrisburg, Pa.							5.30 P2		6.475 P2	
	Milton, Pa.	5.825 M7	5.825 M7								
	Hartford, Conn.			8.15 R3		9.325 R3					
	Johnstown, Pa.	5.675 B3	5.675 B3		6.725 B3		8.30 B3	5.30 B3		7.50 B3	7.95 B3
	Fairless, Pa.	5.825 U1	5.825 U1		6.875 U1						
	Newark, Camden, N. J.			8.10 W10, P10		9.20 W10, P10					
	Bridgeport, Putnam, Willimantic, Conn.			8.20 W10 8.15 J3	6.80 N8	9.175 N8					
	Sparrows Pt., Md.	5.675 B3						5.30 B3		7.50 B3	7.95 B3
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 B5, C14		9.325 A5, B5					8.30 A5, W6
	Spring City, Pa.			8.10 K4		9.20 K4					
	Alton, Ill.	5.875 L1									8.20 L1
	Ashland, Newport, Ky.							5.30 A7, A9		7.50 A9	7.95 A7
	Caston, Massillon, Mansfield, Ohio	6.15* R3		7.65 R3, R2	6.725 R3 6.475 T5	9.025 R3, R2 8.775 T5		5.30 E2			
MIDDLE WEST	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 U1, R3, W8, N4, P13	5.675 U1, R3, N4, P13, W8, B5, L2, N9	7.65 A5, W10, W8, B5, L2, N9	6.725 U1, R3, W8	9.025 A5, W10, W8, L2, N8, B5	8.30 U1, W8, R3	5.30 U1, A1, W8, I3	6.375 U1	7.50 U1, W8	8.00 A5, R3, W8, N4, K2, W7
	Cleveland, Ohio Elyria, Ohio	5.675 R3	5.675 R3	7.65 A5, C13, C18		9.025 A5, C13, C18	8.30 R3	5.30 R3, J3	6.375 J3		7.95 R3, J3
	Detroit, Mich.	5.675 G3	5.675 G3	7.90 P3 7.85 P8, B5 7.65 R5	6.725 R5, G3	9.025 R5 9.225 B5, P3, P8	8.30 G3	5.30 G3		7.50 G3	7.95 G3
	Duluth, Minn.										8.00 A5
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 U1, J3, Y1	5.675 U1, J3, Y1	7.65 R3, J3	6.725 U1, J3, Y1	9.025 R3, M4	8.30 U1, Y1	5.30 U1, J3, Y1	6.375 J3, II	7.50 U1, Y1	7.95 U1, Y1, J3
	Granite City, Ill.							5.40 G2			
	Kokomo, Ind.	5.775 C9									8.10 C9
	Sterling, Ill.	5.775 N4	5.775 N4					5.30 N4			8.10 K2
	Niles, Warren, Ohio Sharon, Pa.			7.65 C10	6.725 C10	9.025 C10		5.30 R3, S1		7.50 SI	7.95 R3, SI
	Owensboro, Ky.	5.675 G5			6.725 G5						
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 U1, J3	5.675 U1, J3	7.65 A5, B4, R3, J3, C11, W10, S9, C8, M9	6.725 U1, J3, C11, B7	9.025 A5, W10, R3, S9, C11, C8, M9	8.30 U1, J3	5.30 U1, J3	6.375 U1, J3	7.50 U1, J3, B7	7.95 U1, J3, B7
	Portsmouth, Ohio							5.30 W5			
	Weirton, Wheeling, Fallansbee, W. Va.										8.00 P7
	Youngstown, Ohio	5.675 U1, R3, Y1	5.675 U1, R3, Y1	7.65 A1, Y1, F2	6.725 U1, Y1	9.025 Y1, F2	8.30 U1, Y1	5.30 U1, R3, Y1		7.50 Y1	7.95 U1, Y1
	Emeryville, Cal. Fontana, Cal.	6.425 J5 6.375 K1	6.425 J5 6.375 K1		7.775 K1		9.00 K1	6.10 K1		8.30 K1	8.75 K1
	Geneva, Utah							5.30 C7			7.95 C7
	Kansas City, Mo.	5.925 S2	5.925 S2		6.975 S2		8.55 S2				8.25 S2
	Los Angeles, Torrance, Cal.	6.375 C7, B2	6.375 C7, B2	9.10 R3, P14, S1/2	7.775 B2	11.00 P14, S1/2	8.625 B2				8.95 B2
	Minneapolis, Colo.	6.125 C6	6.125 C6					6.15 C6			8.25 C6
	Portland, Ore.	6.425 O2	6.425 O2								
	San Francisco, Niles, Pittsburgh, Cal.	6.375 C7 6.425 B2	6.375 C7 6.425 B2				8.675 B2				8.95 C7, C6
	Seattle, Wash.	6.425 B2, N6	6.425 B2				8.675 B2	6.20 B2		8.40 B2	8.85 B2
WEST	Atlanta, Ga.	5.875 A8	5.875 A8								8.00 A8
	Fairfield City, Ala. Birmingham, Ala.	5.675 T2, R3, C16	5.675 T2, R3, C16	8.25 C16			8.30 T2	5.30 T2, R3		7.95 T2	8.00 T2, R3
	Houston, Ft. Worth, Lone Star, Texas	5.925 S2	5.925 S2		6.975 S2		8.55 S2	5.40 S2		7.60 S2	8.05 S2
											8.25 S2
SOUTH											

† Merchant Quality—Special Quality 35¢ higher.

(Effective Jan. 5, 1959)

* Special Quality.

Key
A1
A2
A3
A4
A5
A6
A7
A8
A9
B1
B2
B3
B4
B5
B6
B7
B8
C1
C2
C4
C6
C7
C8
C9
C10
C11
C13
C14
C15
C16
D1
D2
D3
D4
E1
E2
E3
F1
F2
F3
P1
Span
You
For
Pitt
Alt
Sha
Fain
Pitt
W/
Wh
You
Ind
Loc

Span
You
Fain
For
Pitt
Alt
Sha
Pitt
W/
Wh
You
Ind
Loc

1/2

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1	Acme Steel Co., Chicago
A2	Alan Wood Steel Co., Conshohocken, Pa.
A3	Allegheny Ludlum Steel Corp., Pittsburgh
A4	American Cladmetals Co., Carnegie, Pa.
A5	American Steel & Wire Div., Cleveland
A6	Angel Nail & Chaplet Co., Cleveland
A7	Armc Steel Corp., Middletown, Ohio
A8	Atlanta Steel Co., Atlanta, Ga.
A9	Acme-Newport Steel Co., Newport, Ky.
B1	Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2	Bethlehem Pacific Coast Steel Corp., San Francisco
B3	Bethlehem Steel Co., Bethlehem, Pa.
B4	Blair Strip Steel Co., New Castle, Pa.
B5	Bliss & Laughlin, Inc., Harvey, Ill.
B6	Brook Plant, Wickwire-Spenzer Steel Div., Birdsboro, Pa.
B7	A. M. Byers, Pittsburgh
B8	Braeburn Alloy Steel Corp., Braeburn, Pa.
C1	Calstrip Steel Corp., Los Angeles
C2	Carpenter Steel Co., Reading, Pa.
C4	Claymont Products Dept., Claymont, Del.
C6	Colorado Fuel & Iron Corp., Denver
C7	Columbia Geneva Steel Div., San Francisco
C8	Columbia Steel & Shafing Co., Pittsburgh
C9	Continental Steel Corp., Kokomo, Ind.
C10	Copperweld Steel Co., Pittsburgh, Pa.
C11	Crucible Steel Co. of America, Pittsburgh
C13	Cuyahoga Steel & Wire Co., Cleveland
C14	Compressed Steel Shafting Co., Readville, Mass.
C15	G. O. Carlson, Inc., Thorndale, Pa.
C16	Connors Steel Div., Birmingham
C18	Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.
D1	Detroit Steel Corp., Detroit
D2	Driver Co., Newark, N. J.
D3	Driver Harris Co., Harrison, N. J.
D4	Dickson Weatherproof Nail Co., Evanston, Ill.
E1	Eastern Stainless Steel Corp., Baltimore
E2	Empire-Reeves Steel Corp., Manfield, O.
E3	Enamel Products & Plating Co., McKeesport, Pa.
F1	Firth Sterling, Inc., McKeesport, Pa.
F2	Fitzsimons Steel Corp., Youngstown
F3	Follansbee Steel Corp., Follansbee, W. Va.

G2	Granite City Steel Co., Granite City, Ill.
G3	Great Lakes Steel Corp., Detroit
G4	Greer Steel Co., Dover, O.
G5	Green River Steel Corp., Owenboro, Ky.
H1	Hanna Furnace Corp., Detroit
I2	Ingersoll Steel Div., Chicago
I3	Inland Steel Co., Chicago
I4	Interlake Iron Corp., Cleveland
J1	Jackson Iron & Steel Co., Jackson, O.
J2	Jessop Steel Corp., Washington, Pa.
J3	Jones & Laughlin Steel Corp., Pittsburgh
J4	Joyal Mfg. & Supply Co., Chicago
J5	Judson Steel Corp., Emeryville, Calif.
K1	Kaiser Steel Corp., Fontana, Calif.
K2	Keystone Steel & Wire Co., Peoria
K3	Koppers Co., Granite City, Ill.
K4	Keystone Drawn Steel Co., Spring City, Pa.
L1	Laclede Steel Co., St. Louis
L2	La Salle Steel Co., Chicago
L3	Lone Star Steel Co., Dallas
L4	Lukens Steel Co., Coatesville, Pa.
M1	Mahoning Valley Steel Co., Niles, O.
M2	McLouth Steel Corp., Detroit
M3	Mercer Tube & Mfg. Co., Sharon, Pa.
M4	Mid States Steel & Wire Co., Crawfordville, Ind.
M6	Mystic Iron Works, Everett, Mass.
M7	Milton Steel Products Div., Milton, Pa.
M8	Mill Strip Products Co., Evanston, Ill.
M9	Moltrup Steel Products Co., Beaver Falls, Pa.
N1	National Supply Co., Pittsburgh
N2	National Tube Div., Pittsburgh
N4	Northwestern Steel & Wire Co., Sterling, Ill.
N6	Northwest Steel Rolling Mills, Seattle
N7	Newman Crosby Steel Co., Pawtucket, R. I.
N8	Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9	Nelson Steel & Wire Co.
O1	Oliver Iron & Steel Co., Pittsburgh
O2	Oregon Steel Mills, Portland
P1	Page Steel & Wire Div., Monessen, Pa.
P2	Phoenix Iron & Steel Co., Phoenixville, Pa.
P3	Pilgrim Drawn Steel Div., Plymouth, Mich.
P4	Pittsburgh Coke & Chemical Co., Pittsburgh
P5	Pittsburgh Screw & Bolt Co., Pittsburgh
P6	Pittsburgh Steel Co., Pittsburgh
P7	Portsmouth Div., Detroit Steel Corp., Detroit
P8	Plymouth Steel Co., Detroit
P9	Pacific States Steel Co., Niles, Cal.
P10	Precision Drawn Steel Co., Camden, N. J.
P11	Production Steel Strip Corp., Detroit
P13	Phoenix Mfg. Co., Joliet, Ill.
P14	Pacific Tube Co.
P15	Philadelphia Steel and Wire Corp.
R2	Reliance Div., Eaton Mfg. Co., Massillon, O.
R3	Republic Steel Corp., Cleveland
R4	Roebling Sons Co., John A., Trenton, N. J.
R5	Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6	Rodney Metals, Inc., New Bedford, Mass.
R7	Rome Strip Steel Co., Rome, N. Y.
S1	Sharon Steel Corp., Sharon, Pa.
S2	Sheffield Steel Div., Kansas City
S3	Shenango Furnace Co., Pittsburgh
S4	Simonds Saw and Steel Co., Fitchburg, Mass.
S5	Sweet's Steel Co., Williamsport, Pa.
S7	Stanley Works, New Britain, Conn.
S8	Superior Drawn Steel Co., Monaca, Pa.
S9	Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10	Seneca Steel Service, Buffalo
S11	Southern Electric Steel Co., Birmingham
S12	Sierra Drawn Steel Corp., Los Angeles, Calif.
T1	Tonawanda Iron Div., N. Tonawanda, N. Y.
T2	Tennessee Coal & Iron Div., Fairfield
T3	Tennessee Products & Chem. Corp., Nashville
T4	Thomas Strip Div., Warren, O.
T5	Timken Steel & Tube Div., Canton, O.
T7	Texas Steel Co., Fort Worth
T8	Thompson Wire Co., Boston
U1	United States Steel Corp., Pittsburgh
U2	Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3	Ulbrich Stainless Steels, Wallingford, Conn.
U4	U. S. Pipe & Foundry Co., Birmingham
W1	Wallingford Steel Co., Wallingford, Conn.
W2	Washington Steel Corp., Washington, Pa.
W3	Weirton Steel Co., Weirton, W. Va.
W4	Wheatland Tube Co., Wheatland, Pa.
W5	Wheeling Steel Corp., Wheeling, W. Va.
W6	Wickwire Spencer Steel Div., Buffalo
W7	Wilson Steel & Wire Co., Chicago
W8	Wisconsin Steel Div., S. Chicago, Ill.
W9	Woodward Iron Co., Woodward, Ala.
W10	Wyckoff Steel Co., Pittsburgh
W12	Wallace Barnes Steel Div., Bristol, Conn.
Y1	Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (per) f.o.b. mills. Base price about \$200 per net ton.

STANDARD T. & C.	BUTTWELD							SEAMLESS														
	1/2 in.		3/4 in.		1 in.		1 1/4 in.		1 1/2 in.		2 in.		2 1/2-3 in.		2 in.		2 1/2 in.		3 in.		3 1/2-4 in.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. B3...	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Youngstown R3...	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fontana K1...	*10.75	*26.00	*7.75	*22.00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*6.75	*15.25	*0.75	*15.50								
Pittsburgh J3...	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Alton, Ill. L1...	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Sharon M3...	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fairless N2...	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Pittsburgh N1...	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Wheeling W3...	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Wheeland W4...	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Youngstown Y1...	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Indiana Harbor Y1...	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*3.50								
Lorain N2...	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. B3...	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Youngstown R3...	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless N2...	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Fontana K1...	*6.25		+2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh J3...	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Alton, Ill. L1...	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Sharon M3...	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh N1...	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Wheeling W5...	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheeland W4...	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown Y1...	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Indiana Harbor Y1...	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	*0.75	13.75	0.25	14.25	0.75	14.75	*0.50								
Lorain N2...	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50

Threads only, butt-weld and seamless, 2 1/2 pt. higher discount. Plain ends, butt-weld and seamless, 3-in. and under, 5 1/2 pt. higher discount.
 Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: 1/2, 3/4 and 1-in., 2 pt.; 1 1/2 and 2-in., 1 1/2 pt.; 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2 1/2 and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.50¢ per lb.

(Effective Jan. 5, 1959)

To identify producers, see Key on preceding page

TOOL STEEL

F.o.b. mill	W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	—	\$1.84	T-1
18	4	1	—	—	5	2.545	T-4
18	4	2	—	—	—	2.005	T-2
1.5	4	1.5	8	—	—	1.20	M-1
6	4	3	6	—	—	1.59	M-3
6	4	2	5	—	—	1.345	M-2
High-carbon chromium..						.955	D-3, D-5
Oil hardened manganese..						.505	O-2
Special carbon .....						.38	W-1
Extra carbon .....						.38	W-1
Regular carbon .....						.325	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Stainless Type	Base prices, cents per lb f.o.b.			
	Cladding	Plate (L4, C4, A3, J2)	Sheet (J2)	Sheet (J2)
Cladding	10 pct	15 pct	20 pct	20 pct
302.....				37.50
304.....	28.50	31.55	34.30	40.00
316.....	42.20	46.25	50.25	58.75
321.....	34.50	37.75	41.05	47.25
347.....	40.80	44.65	48.55	57.00
405.....	24.60	26.90	29.25	—
410.....	22.70	24.85	27.00	—
430.....	23.45	25.65	27.90	—

CR Strip (S9) Copper, 10 pct, 2 sides, \$38.75; 1 side, \$33.10.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer U1.....	5.75	6.725	7.25	—	—	15.35
Cleveland R3.....			10.10	—	—	—
So. Chicago R3.....			10.10	—	—	—
Easley T2.....	5.75	6.725	—	10.10	6.875	—
Fairfield T2.....		6.725	—	10.10	6.875	—
Gary U1.....	5.75	6.725	—	—	—	—
Huntington C16.....		6.50	—	—	—	—
Ind. Harbor I3.....		6.725	—	—	—	—
Johnstown B3.....		6.725	—	—	—	—
Joliet U1.....		7.25	—	—	—	—
Kansas City S2.....		10.10	—	—	—	15.35
Lackawanna B3.....	5.75	6.725	7.25	—	6.875	—
Lebanon B3.....		7.25	—	—	—	15.35
Minnequa C6.....	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh P5.....	5.75	6.725	7.25	—	—	14.75
Pittsburgh J3.....		—	—	10.10	—	—
Seattle B2.....		—	—	—	6.75	15.85
Steelton B3.....	5.75	7.25	—	—	10.10	6.875
Struthers Y1.....		—	—	—	6.75	—
Torrance C7.....		—	—	—	6.75	—
Williamsport S5.....	6.50	—	—	—	—	—
Youngstown R3.....		—	—	10.10	—	—

COKE

Furnace, beehive (f.o.b.)	Net-Ton
Connellsburg, Pa.	\$14.50
Foundry, beehive (f.o.b.)	\$18.00 to \$18.50
Foundry oven coke	
Buffalo, del'd	\$31.75
Detroit, f.o.b.	30.50
New England, del'd	31.55
Kearney, N. J., f.o.b.	29.75
Philadelphia, f.o.b.	29.50
Swedeland, Pa., f.o.b.	29.50
Painesville, Ohio, f.o.b.	30.50
Erie, Pa., f.o.b.	30.50
Cleveland, del'd	32.65
Cincinnati, del'd	31.84
St. Paul, f.o.b.	29.75
St. Louis, f.o.b.	31.50
Birmingham, f.o.b.	28.85
Milwaukee, f.o.b.	30.50
Neville, Is., Pa.	29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1958 season. Freight changes for seller's account.	Gross Ton
Openhearth lump	\$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage	Hot-Rolled	Cold-Reduced (Coiled or Cut Length)	
		Semi- Processed	Fully Processed
F.o.b. Mill Cents Per Lb	(Cut Lengths)*		
Field.....		9.875	—
Armature.....	11.70	11.20	11.70
Elect.....	12.40	11.90	12.40
Special Motor.....		12.475	—
Motor.....	13.55	13.05	13.55
Dynamo.....	14.65	14.15	14.65
Trans. 72.....	15.70	15.20	15.70
Trans. 65.....	16.30	—	—
		Grain Oriented	
Trans. 58.....	16.80	Trans. 80.....	19.70
Trans. 52.....	17.85	Trans. 73.....	20.20
		Trans. 66.....	20.70

Producing points: Bessemer Bottom (W5); Brackenridge (A3); Granite City (G2); Indiana Harbor (I3); Mansfield (E2); Newport, Ky. (A9); Niles, O. (S1); Vandergrift (U1); Warren, O. (R3); Zanesville, Butler (A7).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE	CARBON*		
	Diam. (In.)	Length (In.)	Price
24	84	27.25	40 100, 110 12.50
20	72	26.50	35 110 11.20
18	72	27.50	30 110 11.70
14	72	27.25	24 72 11.95
12	72	28.25	20 90 11.55
10	60	29.50	17 72 12.10
8	48	30.00	14 72 12.55
7	60	29.75	10 60 13.80
6	60	33.25	5 60 14.25
4	40	37.00	—
3	40	39.25	—
2½	30	41.50	—
2	24	64.00	—

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000	
Super duty, Mo., Pa., Md., Ky.	\$185.00
High duty (except Salina, Pa., add \$5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa., add \$2.00)	103.00
Ground fire clay, net ton, bulk	22.50

Silica Brick

Mt. Union, Pa., Enzley, Ala.	\$158.00
Childs, Hays, Latrobe, Pa.	163.00
Chicago District	168.00
Western Utah	183.00
California	165.00
Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	163.00-168.00
Silica cement, net ton, bulk, Latrobe	29.75
Silica cement, net ton, bulk, Chicago	26.75
Silica cement, net ton, bulk, Enzley, Ala.	27.75
Silica cement, net ton, bulk, Mt. Union	25.75
Silica cement, net ton, bulk, Utah and Calif.	39.00

Chrome Brick

Per net ton
Standard chemically bonded, Balt.
Standard chemically bonded, Curtin, Calif.
Burned, Balt.

Magnesite Brick

Standard, Baltimore	\$140.00
Chemically bonded, Baltimore	119.00
in bulk	46.00
in sacks	52.00-54.00

Grain Magnesite

St. % to 1/2-in. grains
Domestic, f.o.b. Baltimore in bulk
Domestic, f.o.b. Chewelah, Wash.
Luning, Nev.
in bulk
in sacks

Dead Burned Dolomite	Per net ton
F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	\$16.75
Missouri Valley	15.00
Midwest	17.00

(Effective Jan. 5, 1959)

MERCHANT WIRE PRODUCTS

F.e.b. Mill	Standard Q Coated Nets					
	Col	Cal	Col	Cal	Col	Cal
Alabama City R3	173	187	212	193	9.00	9.55
Alliquippe J3**	173	190	212	193	9.00	9.75
Atlanta A8**	175	192	214	198	8.75	9.425
Bartonsville K2**	175	192	214	198	9.00	9.75
Buffalo W6					9.00	9.55
Chicago N4**	173	190	212	193	9.00	9.55
Chicago R3	173	187	212	193	9.00	9.55
San Fran. C6	173	187	212	193	8.65	9.29
Sparrows Pt. B3**	175	188	217	198	9.25	9.801
Struthers, O. V1	173	187	214	198	9.10	9.775
Worcester A5	173	187	214	198	8.65	9.28
Williamsport S5					9.30	9.85

* Zinc less than .10¢. ** .10¢ zinc.

** 11-12¢ zinc. † Plus zinc extras.

† Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.e.b. Mill

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported, f.o.b.	29.50 to 33.00
Electrolytic, domestic	34.50
Sponge	11.25
Atomized	11.25
Hydrogen Reduced	11.25 to 12.00
Carbonyl*	88.00
Welding Powders*	8.10
Cutting and Scarfing Powders*	9.10

Copper Powders

Electrolytic, domestic	41.00
Precipitated	40.50 to 45.00
Atomized	39.80 to 48.30
Hydrogen reduced, f.o.b.	43.25
Bronze	47.20 to 51.50
Chromium, electrolytic	\$5.00
Lead	19.00
Manganese, f.o.b.	42.00
Molybdenum	\$3.60 to \$3.95
Nickel	\$1.05 to \$1.03
Nickel Silver	53.50
Nickel Steel	13.00
Solder	13¢ plus metal value
Stainless Steel, 302	\$1.07
Stainless Steel, 316	\$1.26
Steel, atomized, prealloyed, 4600 series	14.00 plus metal value
Tin	14¢ plus metal value
Titanium, 99.25 + %, per lb., f.o.b.	\$11.25
Tungsten	\$3.15 (nominal)

* F.O.B., shipping point.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)
Pct. Discounts

Bolts	1-4 Containers	5 Containers	20,000 Lbs.	40,000 Lbs.
Machine ½" and smaller x 3" and shorter	55	57	61	62
½" diam. x 3" and shorter	47	49½	54	55
¾" thru 1" diam x 6" and shorter	37	39½	46	46
¾" thru 1" diam. longer than 6" and 1½" and larger x all lengths	31	34	40	41
Rolled thread, ½" and smaller x 3" and shorter	55	57	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and smaller x 6" and shorter	48	50½	55	56

Note: Add 25 pct for less than container quantity.
Distributor prices are 5 pct less on bolts and square nuts.

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
½ in. or smaller	62
¾ in. to 1½ in. inclusive	56
1½ in. and larger	51½

C. P. Hex, reg. & hvy.

½ in. or smaller	62
¾ in. to 1½ in. inclusive	56
1½ in. and larger	51½

Hot Galv. Hex Nuts (All Types)

½ in. and smaller	41
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Semi-finished Hex Nuts

½ in. or smaller	62
¾ in. to 1½ in. inclusive	56
1½ in. and larger	51½

(Add 25 pct for broken case or keg quantities)

Finished

% in. and smaller	65
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Rivets	Base per 100 lb
½ in. and larger	\$12.85
7/16 in. and smaller	15

Cap Screws	Discount (Packages)
Full Finished H. C. Heat Treat	
New std. hex head, packaged	Full Case

½" diam. and smaller x 6" and shorter	54	42
¾", ¾", and 1" diam. x 6" and shorter	38	23
¾" diam. and smaller x longer than 6"	...	...
¾", ¾", and 1" diam. x longer than 6"	...	...
		C-1018 Steel
		Full-Finished
		Cartons Bulk
½" through ¾" dia. x 6" and shorter	59	48
¾" through 1" dia. x 6" and shorter	45	32
Minimum quantity—½" through ¾" diam., 15,000 pieces; 7/16" through ¾" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.		

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer	
500 lb lots	42.25
Electrodeposited	33.25
Brass, 80-20, ball anodes, 2000 lb or more	46.50
Zinc, ball anodes, 2000 lb lots	17.50
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carton, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.45
Tin, ball anodes	\$1.05 per lb (approx.)

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	65.90
Copper sulphate, 100 lb bags, per cwt.	22.15
Nickel salts, single, 100 lb bags	45.00
Nickel chloride, freight allowed, 100 lb	82.25
Sodium cyanide, domestic, f.o.b. N. Y. 200 lb drums	23.70
(Philadelphia price 24.15)	
Zinc cyanide, 100 lb drum	60.75
Potassium cyanide, 100 lb drum N. Y.	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.7
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier
5 in. or larger, bell and spigot pipe. Ex-
planation: p. 57, Sept. 1, 1955, issue.
Source: U. S. Pipe and Foundry Co.

STEEL SERVICE CENTERS

Cities	Metropolitan Price, dollars per 100 lb.						
	Sheets		Strip	Plates	Shapes	Bars	Alloy Bars
Atlanta	8.59	9.87	10.13	8.91	9.29	9.40	9.39
Baltimore	8.65	9.35	9.09	9.15	9.10	9.65	9.55
Birmingham	8.18	9.45	10.46	8.51	8.89	9.00	8.99
Boston	10	9.41	10.50	12.07	9.84	10.12	10.21
Buffalo	15	8.40	9.75	11.00	8.90	9.35	9.40
Chicago	15	8.40	9.60	11.05	8.66	9.04	9.15
Cincinnati	15	8.58	9.65	10.70	8.98	9.42	9.71
Cleveland	15	8.51	9.69	11.51	8.78	9.28	9.54
Denver	20	9.60	11.34	12.94	9.63	9.96	10.04
Detroit	15	8.66	9.85	11.40	9.03	9.41	9.71
Houston	8.10	8.60	—	8.15	8.45	8.05	8.10
Kansas City	15	9.02	10.27	11.37	9.33	9.71	9.82
Los Angeles	8.70 ^a	10.20 ^b	12.20	9.15	9.10	9.00	9.10
Memphis	15	8.55	9.50	—	8.60	8.93	9.01
Milwaukee	15	8.54	9.73	11.19	8.80	9.18	9.37
New York	10	8.97	10.23	11.20	9.74	9.87	9.84
Norfolk	20	8.20	—	8.00	8.45	9.20	8.90
Philadelphia	10	8.30	9.35	10.44	9.35	9.25	9.50
Pittsburgh	15	8.50 ^c	9.70 ^c	11.05	8.76	9.05	9.15
Portland	10.00 ^d	11.75 ^d	13.30 ^d	11.95 ^d	11.50 ^d	11.10 ^d	9.85 ^d
San Francisco	10	9.75	11.20	11.50	9.85	10.10	10.25
Seattle	9.95	11.55	12.45	10.00	9.70	9.80	10.10
Spokane	15	10.10	11.70	12.60	10.65	9.85	10.75
St. Louis	15	8.78	9.98	11.43	9.04	9.42	9.63
St. Paul	15	8.94	10.19	10.86	8.99	9.45	9.53

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. *All sizes except 18 and 16 gage.

^a 10¢ sine. ^b Deduct for country delivery. ^c C1018—1 in. rounds. ^d 10 ga. x 36" x 120"; ^e 26 ga. x 30" x 96"; ^f 4 1/2" x 1" in lots of 1000 to 9999; ^g sheared plate 1/4" x 84" in lots of 1000 to 9999; ^h 3" x 5.70" in lots of 1000 to 9999; ⁱ M-1020—1-in. rounds in lots of 1000 to 9999; ^j 15 ga. & heavier.

(Effective Jan. 5, 1959)

PIG IRONDollars per gross ton, f.o.b.,
subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. <i>B6</i>	68.00	68.50	69.00	69.50	.....
Birmingham <i>R3</i>	62.00	62.50	.....	.....	.....
Birmingham <i>W9</i>	62.00	62.50*	66.50	.....	.....
Birmingham <i>U4</i>	62.00	62.50*	66.50	.....	.....
Buffalo <i>R3</i>	66.00	66.50	67.00	67.50	.....
Buffalo <i>H1</i>	66.00	66.50	67.00	67.50	.....
Buffalo <i>W6</i>	66.00	66.50	67.00	67.50	.....
Chester <i>P2</i>	66.50	67.00	67.50	.....	.....
Chicago <i>I4</i>	66.00	66.50	66.50	67.00	.....
Cleveland <i>A5</i>	66.00	66.50	67.00	67.50	71.00†
Cleveland <i>R3</i>	66.00	66.50	66.50	67.00	.....
Duluth <i>I4</i>	66.00	66.50	66.50	67.00	71.00†
Erie <i>I4</i>	66.00	66.50	66.50	67.00	71.00†
Everett <i>M6</i>	67.50	68.00	68.50	.....	.....
Fontana <i>K1</i>	75.00	75.50	.....	.....	.....
Geneva, Utah <i>C7</i>	66.00	66.50	67.00	.....	.....
Granite City <i>G2</i>	67.00	68.40	68.90	.....	.....
Hubbard <i>Y1</i>	.....	.....	66.50	.....	.....
Ironton, Utah <i>C7</i>	66.00	66.50	.....	.....	.....
Midland <i>C1</i>	66.00	.....	.....	.....	.....
Minnequa <i>C6</i>	68.00	68.50	69.00	.....	.....
Monessen <i>P6</i>	66.00	.....	.....	.....	.....
Neville Is. <i>P4</i>	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda <i>T1</i>	66.50	67.00	67.50	.....	.....
Sharpsville <i>S3</i>	66.00	66.50	67.00	.....	.....
So. Chicago <i>R3</i>	66.00	66.50	66.50	67.00	.....
So. Chicago <i>W8</i>	66.00	66.50	66.50	67.00	.....
Swedeland <i>A2</i>	68.00	68.50	69.00	69.50	.....
Toledo <i>I4</i>	66.00	66.50	66.50	67.00	.....
Troy, N. Y. <i>R3</i>	68.00	68.50	69.00	69.50	73.00
Youngstown <i>Y1</i>	.....	.....	66.50	.....	.....

DIFFERENTIALS: Add .75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct); 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct; \$2 per ton for 0.50 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Add \$1.00 for 0.31-0.69 pct phosphorus.

Silvery Iron: Buffalo (6 pct), *H1*, \$79.25; Jackson *J1*, *J4* (Globe Div.), \$78.00; Niagara Falls (15.01-15.50), \$101.00; Keokuk (14.01-14.50), \$103.50; (15.51-16.00), \$106.50. Add \$1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add \$1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.); \$64.00. Add \$1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. t.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, re-roll.	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	30.25	28.00	31.50	32.00	33.25	49.50	48.00	46.50	—	21.50	—	21.75
Billets, forging	32.75	36.50*	37.25	38.00	41.00	40.50	62.25	47.00	55.75	28.25	28.25	28.75	28.75
Bars, struct.	42.00	43.00*	44.25	45.00	48.00	47.75	73.00	55.50	64.75	33.75	33.75	34.25	34.25
Plates	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.50	35.50	35.50
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	48.25
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	48.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	46.75
Wire CF; Red HR	40.00	40.75	42.00	42.75	45.50	45.25	60.25	52.75	61.50	32.00	32.00	32.50	32.50
			42.25	43.50	44.25	47.25	71.75	54.50	63.75	33.25	33.75	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11*; Brackenridge, Pa., *A3*; Butler, Pa., *A7*; Vandergrift, Pa., *U1*; Washington, Pa., *W2*, *J2*; Baltimore, *E1*; Middletown, O., *A1*; Massillon, O., *R3*; Gary, *U1*; Bridgeville, Pa., *U2*; New Castle, Ind., *I2*; Detroit, *M2*; Louisville, O., *R5*.

Strip: Midland, Pa., *C11*; Waukegan, Cleveland, *A5*; Carnegie, Pa., *S9*; McKeesport, Pa., *F1*; Reading, Pa., *C2*; Washington, Pa., *W2*; Leechburg, Pa., *A3*; Bridgeville, Pa., *U2*; Detroit, *M2*; Detroit, *S1*; Canton, Massillon, O., *R3*; Harrison, N. J., *D3*; Youngstown, *R5*; Sharon, Pa., *S1*; Butler, Pa., *A7*; Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25 per lb. higher); New Bedford, Mass., *R6*; Gary, *U1* (25 per lb. higher).

Bar: Baltimore, *A7*; S. Duquesne, Pa., *U1*; Munhall, Pa., *U1*; Reading, Pa., *C2*; Titusville, Pa., *U2*; Washington, Pa., *J2*; McKeesport, Pa., *U1*; *F1*; Bridgeville, Pa., *U2*; Dunkirk, N. Y., *A3*; Massillon, O., *R5*; S. Chicago, *U1*; Syracuse, N. Y., *C11*; Watervliet, N. Y., *A3*; Waukegan, *A5*; Canton, O., *T5*, *R3*; Ft. Wayne, *J4*; Detroit, *R5*; Gary, *U1*; Owensboro, Ky., *G5*; Bridgeport, Conn., *N8*.

Structural: Baltimore, *A7*; Massillon, O., *R3*; Chicago, Ill., *J4*; Watervliet, N. Y., *A3*; Syracuse, *C11*; S. Chicago, *U1*.

Plates: Baltimore, *E1*; Brackenridge, Pa., *A3*; Chicago, *U1*; Munhall, Pa., *U1*; *C11*; New Castle, Ind., *I2*; Middletown, *A7*; Washington, Pa., *J2*; Cleveland, Massillon, *R3*; Coatesville, Pa., *C15*; Vandergrift, Pa., *U1*; Gary, *U1*.

Forging billets: Midland, Pa., *C11*; Baltimore, *A7*; Washington, Pa., *J2*; McKeesport, *F1*; Massillon, Canton, O., *R3*; Watervliet, A3; Pittsburgh, Chicago, *U1*; Syracuse, *C11*; Detroit, *R5*; Munhall, Pa., S. Chicago, *U1*; Owensboro, Ky., *G5*; Bridgeport, Conn., *N8*.

(Effective Jan. 5, 1959)

ANOTHER PANNIER MASTER MARKER!

PANNIER'S SUPREME HOLDER WITH ROTO-PIN LOCK
Safe, fast type changing. Holder in variety of styles.
Machined from High-Grade Bar Tool Steel. Hardened anvil maintains type alignment.
Striking Head of Tool Steel... Replaceable to add long service life to Holder.

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SUN SHIP
BUILDING & DRYDOCK COMPANY
CHESTER, PA.

FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd.	Cr, .30-1.00% max. Si.
0.02% C	41.00
0.05% C	39.00
0.10% C	38.50
0.20% C	38.25
4.00-15.0% C	60-70% Cr, 1-2% Si.
3.50-5.00% C	57-64% Cr, 2.00-4.50% Si.
0.025% C (Simplex)	36.75
8% max C	50-55% Cr, 6% max Si.
4% max C	50-55% Cr, 2% max Si.
	26.50

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97.25% min. Cr, 1% max. Fe.	\$1.29
9% to 11% C, 88-91% Cr, 0.75% Fe.	1.38

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (1/8" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.	\$1.15
Carloads	1.17
Ton lots	1.17
Less ton lots	1.19

Low Carbon Ferrochrome Silicon

(Cr 39-41%, Si 42-45%, C 0.05% max.)	
Carloads, delivered, lump, 3-in. x down, packed.	
Price is sum of contained Cr and contained Si.	
Cr	Si
Carloads, bulk	28.25
Ton lots	33.50
Less ton lots	35.10
	14.60
	16.05
	17.70

Calcium-Silicon

Per lb of alloy, lump, delivered, packed.	
30-33% Cr, 60-65% Si, 3.00 max. Fe.	
Carloads, bulk	24.00
Ton lots	27.95
Less ton lots	29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.	
16-20% Ca, 14-18% Mn, 53-59% Si.	
Carloads, bulk	23.00
Ton lots	26.15
Less ton lots	27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe 1/2 in. x 12 mesh.	
Ton lots	21.15
Less ton lots	22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Cr 5 to 7%.	
Carload packed	18.45
Ton lots to carload packed	21.15
Less ton lots	22.40

Graphidex No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Cr 5 to 7%.	
Carload packed	19.20
Ton lots to carload packed	21.15
Less ton lots	22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25
Add or subtract 0.1¢ for each 1 pct Mn above or below base content.	
Briquets, delivered, 66 pct Mn:	
Carloads, bulk	14.80
Ton lots packed in bags	17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.	
Manganese Silicon	
16 to 19% 3% max.	\$100.50
19 to 21% 3% max.	102.50
21 to 23% 3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.	
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.	
Carload, packed	45.75
Ton lots	47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.	
Carloads	34.00
Ton lots	36.00
250 to 1999 lb	38.00
Premium for Hydrogen - removed metal	0.75

Medium Carbon Ferromanganese

Min 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn

Carloads	Ton Less
0.07% max. C, 0.06% (Bulk)	
P, 90% Mn	37.15
0.07% max. C	35.10
0.10% max. C	34.35
0.15% max. C	33.60
0.30% max. C	32.10
0.50% max. C	31.60
Mn, 5.0-7.0% Si	28.60
	31.40
	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.

Carloads bulk	12.80
Ton lots, packed	14.45
Carloads, bulk, delivered, per lb of briquet	15.10
Briquets, packed, pallets, 3000 lb up to carloads	16.30

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

Ton lots,	Carloads,
98.25% Si, 0.50% Fe	24.95
98% Si, 1.0% Fe	24.45
	23.15

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.

Carloads, bulk	8.00
Ton lots, packed	10.80

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.60
65% Si....	15.75
90% Si....	20.00

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.

Openhearth	3.20
Crucible	3.30
High speed steel	3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

Cast	Turnings	Distilled
Ton lots	\$2.05	\$2.95
100 to 1999 lb.	2.40	3.30

(Effective Jan. 5, 1959)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk	9.85¢
Ton lots	11.20¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloeth, Pa., per pound contained Mo

	\$1.50
	1.35

Ferrocolumbium, 50-60% lb, 2 in. x D, delivered per pound contained Cr

Ton lots	\$3.90
Less ton lots	3.95

Ferro-tantalum-columbium, 20% Ta, 40% Cr, 30.30% Fe, del'd ton lots, 2-in. x D per lb can't Cr plus Ta

	\$3.40
	3.35

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloeth, Pa., per pound contained Mo

	\$1.76
	1.54

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$5.00 unitage, per gross ton

	\$12.00
10 tons to less carload	13.00

Ferrotitanium, 40% regular grade

0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti	\$1.35
	1.34

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti

	\$1.50
	1.48

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, car load per net ton

	\$24.00
	23.00

Ferrotungsten, 1/4 x down packed, per pounds contained W, ton lots delivered

	\$2.15
(nominal)	2.15

Molybde oxide, briquets per lb contained

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				350/700	15,800/6000
1	2000	G.E.	450	132/265	4160/2400
2*	2000	Whse.	720	600	13,800/6000
2	1250	Whse.	720	600	4160/2400
1	1250	G.E.	450	250	4160/2400
1	1250	Whse.	720	600	4160/2400
2	500	Whse.	1200	125/250	4000/2300
1	450	Whse.	960	280/300	2300
3	300	Whse.	1200	125/250	4000/2300
1*	300	Al.Ch.	1200	250/300	2300
2	200	Whse.	1200	125/250	3300
1	150	Whse.	1200	250	2300
1	150	G.E.	1200	250	4000/2300
2	150	Rel.	1200	125	2300
—3 Unit Sets					

SPECIAL: before removal (1) 1875-K.W.
Whse., M.G. Set, Gen. 250-V.D.C., 514
R.P.M. with 2700-H.P. Syn. Motor, 13800/
6900/4000-V., 3 ph., 60 cy. with Control.

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Qu.	H.P.	Make	Type	Volts	R.P.M.
1**	3000	G.E.	Y.M.C.	300/600	250/300
3***	3000	Whse.	Rev.	525/600	600
1**	2200	Whse.	Mill	600	92/133
8**	1500	Whse.	Rev.	525	600
1**	1250	Al.Ch.	Mill	600	300/600
2**	940	G.E.	Mill	600	800/1800
1**	700	Whse.	Mill	600	143
4**	700	Whse.	Rev.	250	300/700
2**	645	G.E.	Mill	300	1000/2000
2	600	Whse.	Mill	250	110/220
2	600	Al.Ch.	Mill	600	300/600
1	400	G.E.	M.P.C.	270	450
1	300	Whse.	Mill	230	300
2	275	Whse.	Q.M. 660-6	250	425/850
1	175	G.E.	C.D. 175-A	245	800/1025
1	125	Whse.	SK-184	230	573/850
1	125	Whse.	SK-190	230	450/1000
1	100	Rel.	461-T	250	1150/1500
1	100	Whse.	SK-183	230	450/1000
1	100	G.E.	CD-175	230	450/1000
1	80	Rel.	651-T	230	573/1150
1	80	El.Dy.	25-B	230	525/1050
1	50/68	Whse.	SK-131	230	500/1500
1	50	G.E.	CD-175	230	400/1200
2*	30/40	Whse.	SK-131	230	500/1500
—T.E.F.C. **-Enclosed Forced Ventilated					
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THE CLEARING HOUSE

Sales Slacken Off At Chicago

Used machine sales in the Midwest, after gains last fall, have slowed down.

Dealers are encouraged, however, by a continuing strong inquiry rate.

Reports from other areas of a slackening in incoming business are echoed by used tool men in the Midwest. The feeling is general, involving rebuilders as well as used machine dealers.

If it's necessary to look for a bright spot in the Chicago picture, it's the fact that the sharp gains scored in September are still holding. Rebuilders, for instance, are quick to point out they are still on a five-day week, as they have been since September.

Money Squeeze — Another encouraging point: The strong inquiry rate. Buyers are shopping. At the moment, however, they are less prone to part with their cash than was the case in September and early November.

The credit picture is getting somewhat uncomfortable. Accounts that normally pay in 30 days are stretching out to 45 days. A number of buyers have commented that, while bank credit isn't as tight as it was in 1956, they are having greater difficulty in raising bank loans. But this hasn't stopped them from pricing equipment.

One of the surprising features of the currently dull Midwestern market is the number of inquiries coming in from out-of-area customers. Buyers from the lower Mississippi Valley have been particularly active in this respect.

Rebuilding Patterns — Reconditioned tools are again leaning heavily on the old bread-and-butter items—light general purpose tools and sheet metal working equipment. Still rebuilders are getting a heavy percentage of their total business from specialized heavy machines. Both trends suggest the buyer is watching his dollar closely and spending only for what he absolutely needs to meet minimum production schedules.

Cautious Hope — Both machine dealers and rebuilders are carefully optimistic about their chances for a further revival in the sales rate during the first quarter. A number of the inquiries currently received seem based on the buyers' hope of having more cash during first quarter.

As might be expected, the leveling in the sales curve of the last 30 days has taken some of the stiffness out of prices. While there has been no slide in prices paid by tool buyers, bargaining is considerably sharper than it was 30 days ago. This trend is expected to carry through most of January.

It seems positive that few, if any, dealers can afford to make heavy price concessions in an effort to encourage turnover.

High Inventories — It's worth noting a number of dealers built inventories in July, August, and September, anticipating a higher November-December sales level than they actually got. But none of them are yet complaining of inventories that are too high.

Obviously, they're counting on a fairly strong first quarter business level.

THE CLEARING HOUSE

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 1—21" & 52" x 77" TANDEM COLD REDUCTION MILL, 4-high, 3 stands.
 1—18" & 48" x 42" Tandem Cold Reduction Mill, 4-high, 5-stands.
 1—15" & 30" x 31" 4-HIGH COLD MILL.
 1—28" x 40" HOT STRIP MILL, 2-high, reversing, with 2500 HP D.C. motor generator, etc.
 1—25" x 42" x 66" HOT STRIP MILL, 4-high.
 1—28" PINION STAND, 2-high, modern design.
 1—16" x 24" 2-HIGH, 4-STAND TANDEM COLD MILL, individual D.C. drive motors, take-up reel.
 1—18" x 22" COLD MILL, 2-high.
 1—6" x 10" COLD MILL including uncoiler, recoiler and edging rolls.
 2—28 3-HIGH ROLL STANDS.
 1—New 16" BAR MILL, one 3-high roll stand, pinion stand.

1—New 12" BAR MILL, four 3-high stands, pinion stand.
 1—12" MERCHANT BAR MILL with 18" roughing mill and heating furnace.
 1—9" BAR MILL, 3-high.
 2—MORGAN TRAVELING TILTING TABLES for 24" 3-high bar mill.
 1—34" x 192" ROLL GRINDER.
 2—65-TON ELECTRIC MELTING FURNACES, TOP CHARGE, with all electrical and mechanical equipment, including 15,000 KVA and 10,333 KVA transformer.
 1—New top-charge ELECTRIC MELTING FURNACE with 2000 KVA transformer (3200 volts, 3 phase, 60 cycle).
 1—ELECTRIC MELTING FURNACE, 1-ton, with 1000 KVA transformer.
 2—PACK FURNACES for hot sheet mills 62" x 60", double chamber.
 1—MORGAN INGOT STRIPPER CRANE, 50' span, 200 tons capacity, 230 volts D.C.

1—OPEN HEARTH CHARGING MACHINE, 5 ton capacity, 11' track gauge.
 1—FLYING SHEAR FOR BARS, Morgan, up to 1½ square, moving at speeds up to 1000 FPM.
 1—SHEET SQUARING SHEAR, capacity 156" x 4'.
 1—UNITED HOT SAW, 50" dia. blade sliding frame, 4" stroke.
 1—ROLLER LEVELER, McKay, rolls 60" face x 5½ dia. with gear box and universal spindles.
 1—SHEET CORRUGATING MACHINE, Strain 144", with 2 sets of dies.
 1—3000 HP GEAR DRIVE, ratio 500 to 73.7 RPM.
 1—3000 HP GEAR DRIVE, ratio 500 to 95.8 RPM.
 1—3000 HP GEAR DRIVE, ratio 16.2 to 1.
 1—1200 HP GEAR DRIVE, ratio 5.92 to 1.
 1—1200 HP GEAR DRIVE, 355 to 94.6 RPM, 3.73 to 1 ratio.
 1—3500 HP MOTOR, 11000/6000 volts, 3 phase, 60 cycle, 514 RPM, synchronous, never used.

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 No. 18 Fellows Gear Finishing Machine, m.d.
 No. 61A Fellows, m.d., latest type, 1945
 No. 615A Fellows Spur & Helical, belt drive
 No. 645A Fellows, m.d.
 No. 645A3 Fellows, vee belt drive
 No. 645Y Fellows, m.d.
 No. 70 Cross Deburring Machine, m.d., 1940
 No. 72 Fellows H.S. Spur Gear Shaper, m.d.
 No. 725 Fellows, 1945
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 No. 712 Fellows, m.d.
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 No. 3 Barber-Colman, m.d. in base, 1943
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THE IRON AGE, January 8, 1959



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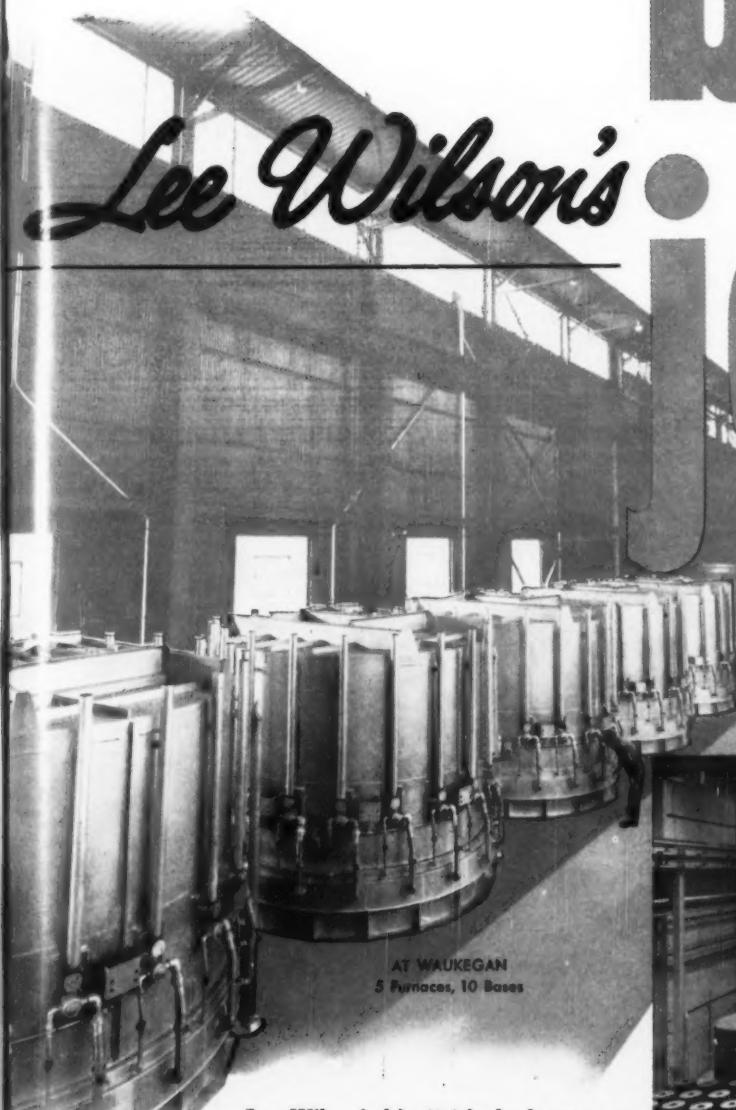
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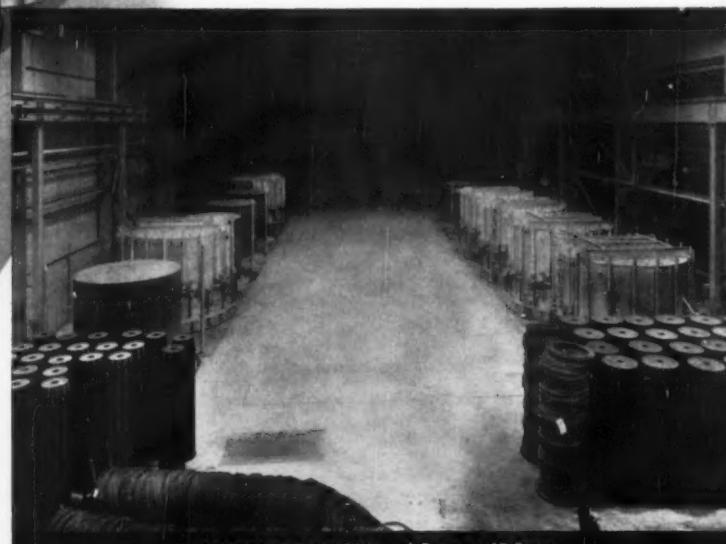


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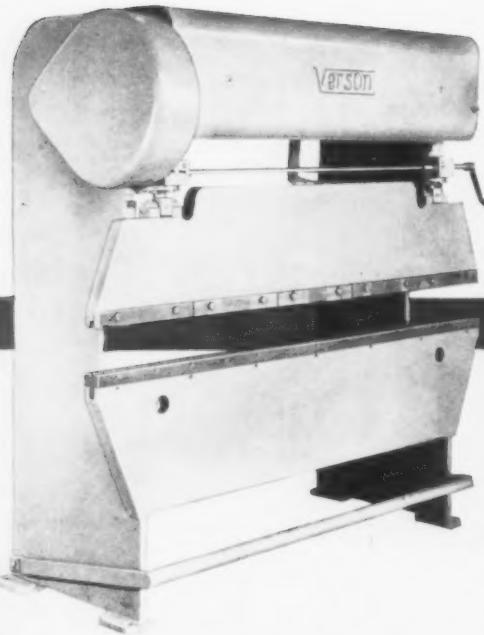
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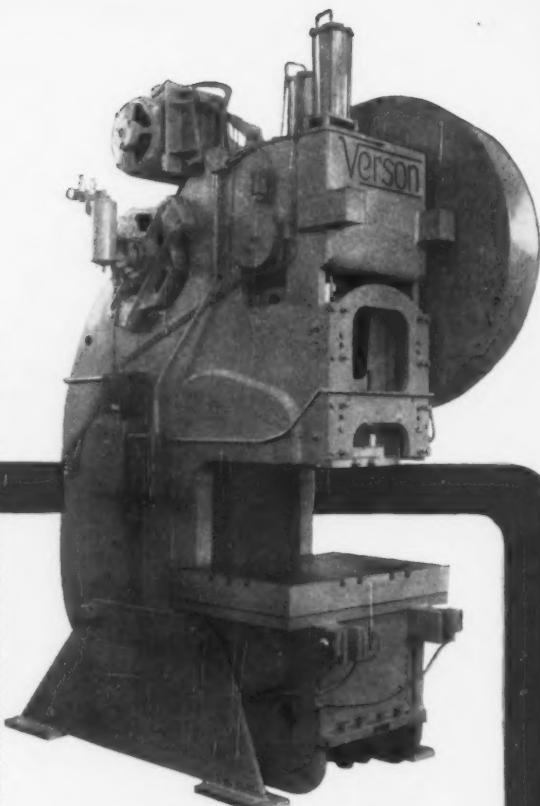


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